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# MOTOR AGE

Vol. XLII  
Number 25PUBLISHED WEEKLY AT THE MALLERS BUILDING  
CHICAGO, DECEMBER 21, 1922Thirty-five Cents a Copy  
Three Dollars a Year

## An All-Year Seller Means Prosperity



### Which type of closed car do you sell?

All motordom knows the Coach is responsible for the present closed car interest. It has brought winter prosperity to thousands of dealers. And two types of cars now contend for this market. One features its fancy body with a high differential cost over open car price; a low price chassis carrying a costly body.

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Over 200 reliable jobbers now carry No-Leak-O Piston Rings in all standard sizes and over sizes. Prompt service *always*.

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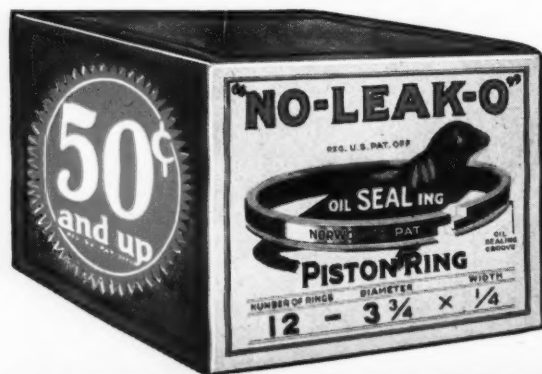
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BALTIMORE, MD.

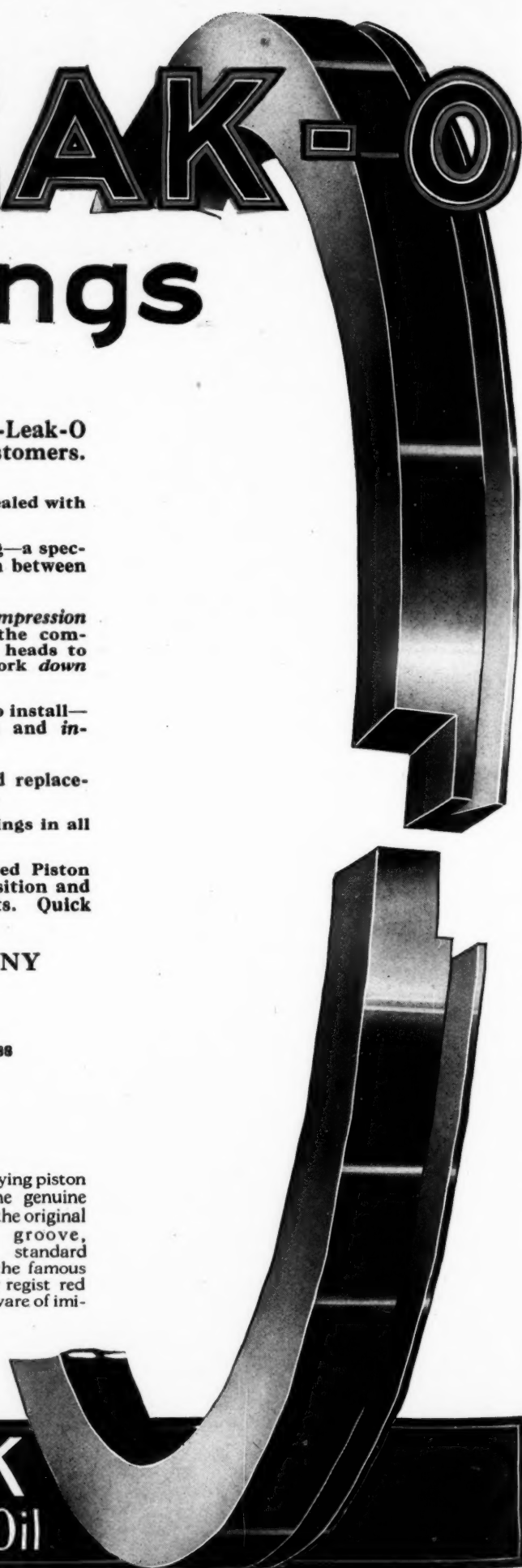
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*Important*—In buying piston rings insist on the genuine No-Leak-O with the original "oilSEALing" groove, packed in this standard package bearing the famous ring and seal, our regist red trade mark. Beware of imitations.

**WON'T LEAK**  
because they're sealed with Oil





# MOTOR AGE

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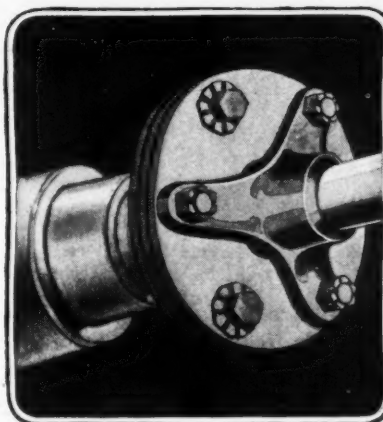
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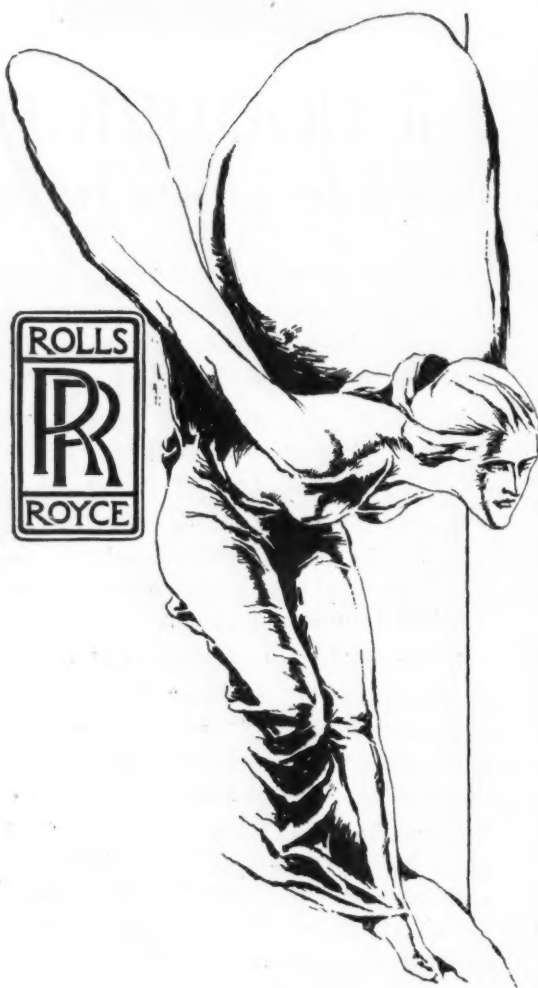
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# MOTOR AGE

## National Show Dates

**A**T a recent National Automobile Chamber of Commerce dinner there was a celebration of the majority birthday of the anniversary of the industry. Great things were predicted for this young giant that had attained such robustness in his juvenile years. All of this was as it should be.

Then!

The leaders of the industry went home and kept on doing things in manhood just as they had in boyhood. They did not follow the famous writer of the Tinkling Cymbal chapter who says, "When I was a child, I spoke as a child; I thought as a child; but when I became a man I put away childish things."

Precedent of the younger days has held hard and fast with the industry, and on no point has it held more closely than on the question of dates of shows. Recently there has been much talk from the best salesmen in the industry that automobile selling had become an all-year business. It is a fact that the time of year for bringing out new models has recognized this movement by changing gradually from January to September for the beginning of the fall season.

This is only natural. The salesman on the firing line needs the best ammunition for his hardest battle, which is the fall and winter months. Also the present day sales development is in the closed car. A manufacturer who would save his closed car announcement for the January show would be regarded by his associates in the industry as somewhat lightheaded, yet the industry, acting as a whole, has done this very thing.

Under the present trend, the shows are going to come in January with practically nothing that is new or interesting for the public to see. *MOTOR AGE* has recently listed the new models announced this fall against the possibilities of the show. This list does not compare

well. It appears that the crowds are expected to come to the shows this year to see "old stuff," if a model of a few weeks can be called "old," and it would seem that they can be so considered when the thoroughness of the automotive dealer display is considered.

It is the opinion of *MOTOR AGE* that the dealers in hundreds of cities, in giving their fall shows, are a step in advance of the master minds of the N. A. C. A. and, if the manufacturers do not look sharp, that the dealer shows in New York and Chicago will soon be better shows than the national exhibitions. The dealer has taken this step because he saw the necessity of arousing public interest, while the manufacturers were following the precedents of youth.

The fall shows introduced as the winter shows now, by two great national exhibitions, would arouse double the interest as in the past. We predict that for many years to come the early fall will be the period of new models and that the fall and winter will be regarded as the beginning of the new sales season rather than the end of the old one. Such a movement will smooth out the selling curve and put the dealer into an all-year business.

Another point worth considering is the value of Christmas as a date for putting the name on the dotted line. If this industry would urge the automobile as the family Christmas gift it would gain a strong psychological closing argument and the fall season effort could well lead up to this, and then the dealer would have a few weeks to clear up his ragged end sales and get an earlier start for the spring business. Heretofore he has waited for the show season before thinking much about the new season.

What do you, as dealers, think of this?

Editorial from *MOTOR AGE* of December 7, 1922

## When Should the National Shows Be Held?

*Lively Discussion Aroused by Motor Age Editorial Suggesting That Automobile Exhibitions Be Held in the Fall*

**W**HAT is the best season for holding automobile shows?

That inquiry means when should shows be held to be the most profitable to the industry, which, of course, means the most profitable to the dealer.

*MOTOR AGE* raised this question in the issue of Dec. 7 by printing an editorial that proposed that the two National Shows be held at an earlier date, and an early fall date was suggested by inference.

On Dec. 12 the directors of the National Automobile

Chamber of Commerce, under whose auspices the New York and Chicago National Shows are held, met in New York and one of the topics brought up for discussion was this question of the best time for holding the shows. It was suggested that a late fall date might be of greater benefit to the industry, and especially to the dealers, than the winter date in effect at the present time. No definite action was taken at that time but it was decided to lay the matter on the table to be held over for further discussion at a later meeting.

The objective in the **MOTOR AGE** editorial was not so much the changing of the show dates, as to get an expression from the industry as to when shows could be most profitably held. The editorial was based on the National Shows, as these two shows set the pace for the dealer shows of the country generally, and if the National Shows were held in the fall, the big show season of the industry would naturally follow the lead.

This editorial has drawn considerable comment, and much of this comment agrees in the main with the expression in the editorial—that is, many of the writers favor an earlier date. Some oppose any change and would keep the shows at approximately the dates they are now held.

In order that this expression might not all be from the dealer field, which is the field to which **MOTOR AGE** makes its direct appeal, copies of this editorial were sent to some manufacturers and others asking for comment. The replies received so far represent the four branches of the industry chiefly interested—manufacturers, distributors, dealers and show managers.

One manufacturer, who writes freely upon the subject but who asks that his letter not be published, strongly favors the change and brings to bear several interesting points.

One of these is that if the show were held earlier in the season, it would supply the occasion for the manufacturer and dealer getting together on the factory winter sales problem and could be made the occasion for planning the spring orders and arranging for winter shipments, which would be helpful to the factory production program. This manufacturer believes that the fall show would be a great factor in enabling the factory to maintain an all-year average of production. He says that today one of the drawbacks against placing early orders on the part of the dealer is his fear that some manufacturer, probably his own, is going to have a new and radically changed line at the show. This man adds:

"I think the months of November and December do not yield the business they should, simply due to the fact that a large number of dealers and buyers are waiting for the National Shows to see what new things may be sprung."

Another manufacturer disagrees with the suggestion that the shows should be held at an earlier date. W. H. Yeldell, sales manager of the Gardner Motor Co., makes his point as follows:

"We are inclined to disagree with you in your contention that the fall automobile shows are, from the dealer's standpoint, productive of better results than the spring shows, and we would not recommend any change in the present dates of the two National Shows.

"This expression of our opinion is largely the result of the actual experience that we know quite a number of our own distributors have had in connection with fall automobile shows as compared with spring shows. Without exception, they have expressed themselves as being in favor of the spring shows when it comes to actually effecting sales. This, after all, is the main thing involved.

"While it may be true that, just from the standpoint of bringing the public's attention to new models, the fall shows are better, still a number of our distributors have told us that in their efforts to actually make sales at fall shows, the average prospective buyer will pass the proposition up with the statement that they are going to hold off until spring before they buy a car."

Gilbert U. Radoye, director of sales and advertising for the Haynes Automobile Co., favors the earlier dates. He writes:

"Mr. Seberling and I have both read your letter and the article, 'National Show Dates.' In our opinion, the National Automobile Shows should precede the fall selling season.

"We are sure that most manufacturers experience a hard fight to get business during December, and this has been due chiefly to the fact that the public in general waits for the manufacturers' announcements at the show, which is usually held the first part of January.

"Provided the National Automobile Show was held in September, we are of the opinion that this would settle conditions and put the public in a more stable state with regard to the buying of cars."

The distributors who have offered their discussion are of about the same mind as the manufacturers. Some of them favor the earlier date, but it is not unanimous.

W. L. Cowan, distribution manager of the Packard-Ontario Motor Co. of Toronto, sends this brief but pointed comment:

"We believe that you are quite right as to the proper time for the National Automobile Shows."

F. W. A. Vesper, former president of the National Automobile Dealers' Association and president of the Vesper-Buick Auto Co. of St. Louis, favors the earlier dates and cites very definite reasons for his preference. His discussion follows:

"Am inclined to believe that it would be a wise thing to hold these shows earlier in the winter or later in the fall and make them the logical place for the original display of new models and not the mid-season display as it now actually is.

"The theory that the show is the best stimulant would seem to make an early winter date preferable as manifestly the spring business does not need the stimulant that would be beneficial in early winter.

"However, there is much to be considered from both standpoints for there might be a possibility of the early winter show killing the late fall business and then again it might be that the stimulant gotten by the shows in early winter might not be of sufficient force to accomplish the result desired and it might lose itself entirely before the opening of spring.

"However, as the national shows at Chicago and New York are generally considered dealer shows and were originally calculated to introduce to the dealers the new productions of the manufacturers, it would seem that the dealers would get more benefit from an early show in that they would receive the stimulation of the new models, the new ideas and the mingling with other dealers and the factory representatives, as is usual at the large national shows, and would be in better mental condition to approach the winter season than would be the case where they have already been associated with the models for a number of months and have practically gotten stale on them and then, going to the show, been confronted with only the same things that they have been in contact with during practically half of the current model year.

"I believe that the best answer to the question would be a thorough trial, which I cannot help but feel would demonstrate the great value of the early winter national shows."

The other side of the question from the distributors' point of view is presented by R. H. Williams of Williams & Hastings, Inc., Hupmobile distributors of Detroit. Mr. Williams writes:

"It is unreasonable to suppose that car manufacturers would not change or improve their models if the shows were to be held earlier in the season. Naturally the buying public is quick to sense these changes and withhold purchasing until they feel sure they are getting the newest product.

"In our opinion, sales need the greatest stimulant during the months of January and February, which is generally supplied by the national and local shows.

"It is much easier also to urge dealers and distributors to put cars in storage during these months when they have been assured by manufacturers that further changes in design will not be made.

"We believe local shows held in the fall are beneficial and have been the means of making a great many sales. This practice should be continued but we do not think the National Shows should be held later than January or the early part of February."

Here is the view of a dealer, a southern dealer at that. His discussion is different from anything that has appeared and is refreshing.

"The way the shows are now held, they mean very little to the south. We like to go. It gives us a nice trip during our dull season, and puts us in the city at a time when we can see some good theatrical shows.

"It is the writer's opinion that the best time for the shows would be when the most new models could be exhibited. As my opinion or understanding it, most all factories close down in the late summer to take stock and start new models. If this is correct, it would seem the proper time for the show would be just as soon as the new models are ready.



"For the shows to be of the greatest benefit to the dealer they should exhibit models that he has not seen before."

Now we come to the show managers. They, of course, are vitally interested in the problem of show dates. In many cases the question of a successful show is the most important one that comes before the dealer association manager during the year. He has studied this question from all angles and has discussed it with the dealers whom he represents in his show activities. Consequently, added interest attaches to his views.

Herbert Buckman, manager of the Cleveland Automobile Manufacturers and Dealers Association, favors the present dates in the following letter:

"The time to hold a business exposition is when it is needed most, that is, in the dull period rather than when there is a natural momentum of sales. Permit me, therefore, to disagree with the suggestion of changing the dates of our national shows. The very fact to which you call attention—the large amount of interest developing in the fall with the advent of new models, especially enclosed cars, in my mind is an argument against holding the big shows at that time.

"The big swing in the industry, to my mind, is toward enclosed cars and that is coming faster even than it can be assimilated by the industry. The sales curve takes a drop in November and December and it would continue at this low point throughout January and February at least and possibly March, if it were not for the shows such as are held in New York, Chicago and other cities. Those buying enclosed cars for the winter have probably bought them during the autumn and salesmen would have few prospects on which to work during the winter months. Instead of that, prospects obtained at the show can be canvassed before the natural rush of spring.

"So far as the actual showing of new models is concerned, I doubt the importance of this because new models are brought out all during the year rather than taking the form of radical revisions in the line at any one particular period.

"No one denies that 'new occasions teach new duties,' but at the same time I do not believe in making a change for the sake of making a change. I think our shows are extraordinarily successful. Surely there is no other industry in the entire country that receives the same stimulus from expositions as does the automobile business. Therefore, just for the sake of doing things differently than we have been doing them, does not strike me as a valid reason for risking loss of potency.

"The cities which hold shows in the fall or spring, I believe, do not receive the same measure of success as the winter shows and while I am always open to conviction, I do not at present see any advantage in risking the change.

George T. Holmes, secretary-treasurer of the Louisville Automobile Dealers Association, feels that a change is sure to come.

"Sentiment here is beginning to favor a fall show. We will probably have one in the fall of 1923 for exhibiting enclosed cars, but the main automobile show is in February around Washington's Birthday. The time, no doubt, will come when the dealers will favor the main show in the fall. The industry is tending that way.

"The sales resistance is great enough during the winter months and is made greater by reason of the fact that people who are prospects during those months insist on putting off salesmen 'until we have seen the new models at the Automobile Show.' If the show were held in the fall, sales resistance to the extent mentioned would be removed. Stimulation of sales would be substituted in its stead during the very time when it is hard to close deals.

"I, therefore, feel that your editorial is a move in the direction that the industry will eventually travel. Just how far ahead of the times you are is a matter that varies according to the progress the automobile business has made in a given locality. It is a strong, well written editorial that is bound to accelerate the movement toward holding the main show in the fall instead of at the beginning of spring. One of these days the calendar of the automobile selling year will be torn up, and when the fragments have settled there will be a twelve months' distribution of business, with the year beginning in September instead of in January.

This suggestion comes from L. B. Sanders, secretary of the Used Car Statistical Bureau, Boston:

"I do not believe anyone knows just what the proper time is to hold these manufacturers' shows. There is one thing certain—that bringing out 1924 models for instance in July or August of 1923 is mighty poor business. We must have our fiscal year and our car year, if we must have one, and at the same time. For instance, a car is produced by the manufacturer in the late fall or early winter, say November. It is shipped to the dealer in New England. It arrives some time in December. It is put in storage; sold, say, in February, March or April of the following year. What year automobile is it from the customer's standpoint? Branham (Branham & Company Automobile Reference Book) say it is a 1923, the dealer will say it is a 1924—that is, it becomes a current model of the year in which it was sold. As a result of just that condition, there is probably ten suits pending in Boston today.

"Now with particular reference to your automobile show time: If the manufacturers were to hold national shows, the New York and Chicago Show the first of September, the last of July or the first of August, everybody would slow up and wait for the new announcements of the National Shows. If that be true, it does not make much difference at what time of the year you hold National Shows. Mr. Bowman and I have given this some little thought, and it would seem that since everybody tries to get pretty well cleaned up by the first of July, that that period, or, say, the first of August, should be the end of the fiscal year. Then let the manufacturers let it be known that new models will be shown September first, and under no circumstances later than September 15th, and that we make it possible for dealers all over the country to get samples at that time, and if necessary let the manufacturers hold their shows at that time.

"This is not a suggestion, it is merely a thought as far as we are concerned. On the other hand, you must remember that one of the biggest sales producing shows from the standpoint of the dealers of the entire country is the Boston Show which occurs the early part of March. It is just the time when we have been pretty well pent up for the whole winter, the fever of spring is coming on and it is proven beyond question of doubt to be one of the best times for an automobile show.

"And last, why do the manufacturers have a show at all?"

The Kansas City Motor Car Dealers Association considers an earlier date essential according to George A. Bond, secretary-treasurer.

"The opening of these shows as a rule is the beginning of our next year's business. Many people will wait for considerable time to purchase a car until these shows are held, in order that they may feel that nothing has been put over on them.

"There is no reason in the world why New York or Chicago could not hold their show in December, and then the larger cities start immediately after these, holding their shows and starting business in their respective territory. Owing to the fact that the southwest territory is at least thirty to sixty days earlier than Chicago and Minneapolis territory, it will be necessary in the future for Kansas City to have an earlier show, and Kansas City will claim the date of the week following Chicago in the future, without any breaks of any kind. In fact, we have the very earliest territory in the entire United States, unless it might be with the exception of California and Florida, and we will find it necessary to have an earlier show in the future.

"If all manufacturers would get out their models at approximately the same time, and do away with having various models coming out at different times of the year upsetting and keeping the business in a chaotic condition, and would standardize their future model period to, say, come out at the first show, this also would be a great help to the retail business and permit us to increase our business and do a continuous business during the year."

What are the most profitable show dates?

The majority of those offering comment on the recent MOTOR AGE editorial favor an earlier season.

Charles P. Joy, Joy Brothers Motor Car Co.

"We certainly are of the same opinion as yourself and cannot see any good reason for waiting until after the first of the year when all of the models have been on the market for several months. We feel that it would be a good thing for



the industry and a big help to dealers all over the country to have the National Show at the same time as the announcement of the new models would be made public by the manufacturers."

**O. Stegeman, Sales Manager, American Automobile Company, Milwaukee.**

"The question of National Show dates has been discussed for a great many years, and we are becoming more convinced than ever that the psychological time to hold automobile shows is preferably the first week in December. At this time, people have just gotten over their Thanksgiving vacation, and take the mental attitude that the expenditure of money for Christmas is inevitable, and while they are in that frame of mind, we would capitalize on it by holding our Auto Show during that period, and get some of the business which at this time of the year is held over until after the shows, in February.

"We trust that you will be able to create enough sentiment amongst the automobile trade to change our show period to the time mentioned above."

**Abbott Automobile Co., Ltd., New Orleans.**

"We agree with you that automobile shows should be held early in the fall. One of the things which tends to slow down sales in the late fall is a feeling in the public's mind, that if there is anything now to be offered, it will be shown at the National Shows. People also have the feeling that any revisions in prices are apt to take place at that time.

"One of the most demoralizing things in the industry during the past two years has been periodic reductions in prices, which usually come out of a clear sky. No sooner than the trade and the public begin to feel that prices are fairly fixed, the cutting of prices and wide spread publicity given to these cuts break out in a new place. We realize that it is impossible to fix prices for all times, and that any attempt to control prices is a dangerous proposition, but it seems to us that members of the National Automobile Chamber of Commerce might agree with each other that any contemplated price changes would be made simultaneously, thereby giving the waters a chance to clear, and not keep them continually muddled up."

**Martin-Nash Motor Co., Atlanta, R. H. Martin, President.**

"Frankly, I know there is a great deal to be said on both sides with regard to the date of the annual shows, and the

benefit derived from holding them at one time rather than at another, and then too maybe the writer is so in the habit of attending shows in January that he is prejudiced in favor of holding them during that month, but I do not see any great advantage in changing the date.

"These shows take up a lot of time of the man who goes to them with a real idea of business on his mind, particularly when he has to travel a long distance to get there, and if these shows were earlier in the year, it would mean a good bit of selling effort would be checked at a time when business would be more rushing than it is at the time of the present show period, around the first part of the year. Personally I am not in favor of shows, factory meetings, etc., in the heart of the spring or in the fall selling season, and I do not believe it would be practical to hold them in mid-summer, therefore from my point of view, it would seem best to continue holding them on the dates they have been held in the past.

"There are many points in favor of some other time, but summing them all up, I do not see the advantage of changing."

"Seasons vary of course in various parts of the country but down in this cotton country, cotton selling starts along in September and October and the rural districts do a great deal of buying. Our fall business is almost as important as our spring business.

"I notice in your editorial you mention that under the present trend, the shows are going to come in January with practically nothing that is new or interesting for the public to see, and it appears that the crowds are expected to come to the shows this year to see "old stuff" if a model of a few weeks can be called "old."

"In this connection I believe it a source of satisfaction both to the majority of dealers as well as prospective buyers to have the opportunity of seeing these models assembled and pronounced as the final models, and better than this, the factory is ready to deliver what they are showing. I remember in the old days, when a new model was shown for the first time, we would all become very enthusiastic, but by the time these jobs were in production and the factory ready to deliver them, we had sat by the fire-side all winter waiting, and our enthusiasm had necessarily cooled. I believe something new in the winter months has its appeal and especially when this something new has been in production long enough for us to be able to get it."

## \$5 REWARD

We are looking for a displeased customer and will give \$5 to anyone who will tell us where to locate one.

**BADDERS MOTOR CO.,  
Ford—Fordson—Lincoln  
Topeka, Kansas**

**T**WELVE thousand cards worded as is this, were distributed by the Badders Motor Co., Topeka, Kan. The cards went to all purchasers of cars, trucks and tractors and through every available avenue of publicity, besides. To this appeal for complaints, there was only one reply and the \$5 was gladly given.

"The morning we began distribution of the cards," said Badders, "I went to the bank and drew out 100 crisp, new \$5 bills in preparation. I felt the results would be well worth the price, for if we could learn of any place in which we were falling down in our service to our customers our business would be materially benefited. Too often complaints are made, but not to the man who should receive them. Of course, the result of the experiment was a pleasant surprise, for our company holds the record for the sale of Ford cars and trucks in the state this year and we naturally expected to find at least a few buyers who would

have some dissatisfaction to report. However, we know we are on the right track, and the fact that only one complaint was made gives us an excellent basis for some advertising.

Such condition of satisfaction among customers is not the result of chance. The Badders Motor Co. makes it a practice to see that all opportunities for trouble are eliminated, so far as possible. First of all, every car is put through a most exacting series of tests and adjustments. Three final inspections are given a car before it is delivered to the buyer. Within three days after the car leaves the shop a representative of the company calls in person on the buyer to see that everything is working properly. In addition to first instructions in driving and caring for the car, letters are sent out at regular intervals, notifying the car owner of details he should keep in mind as the length of usage of the car increases, and the seasons change.

Every repair job handled by the company also is followed up. Within a day or two after the car leaves the shop a postal card, with return card attached, is sent to the customer so that he may report if the repair work does not prove entirely satisfactory.

## Doing One Thing Well

It is an excellent plan for the shop, both large and small to have a "Clean-up" time periodically—say once a week. This does not apply to the more common job of sweeping the floor or straightening up the bench after a job and similar operations which are carried out from day to day.

It does apply to the keeping the machine tools and other shop equipment in order. For example, some shops set aside a definite time, like Saturday morning or afternoon to give all machines a thorough cleaning. These operations are carried out by the men in the shop, usually the man who does all the lathe work does his own cleaning and inspecting of the lathe. Like-wise, the man who has charge of the toolroom looks after the tools, sees that all are in their proper place; wipes them off, oils the surfaces that must be kept from rusting.

If the full value of costly equipment is to be realized to its fullest extent, it is highly important that attention be given to those things which will insure long life and accuracy of work done. Keeping the machine tools fit is one of the things that helps to make maintenance pay.

## Entirely New Clutch Features Second Series Rickenbacker Cars

*Several Other Changes in Chassis Appealing to Maintenance Man. Engine Now Equipped With an Air Cleaner*

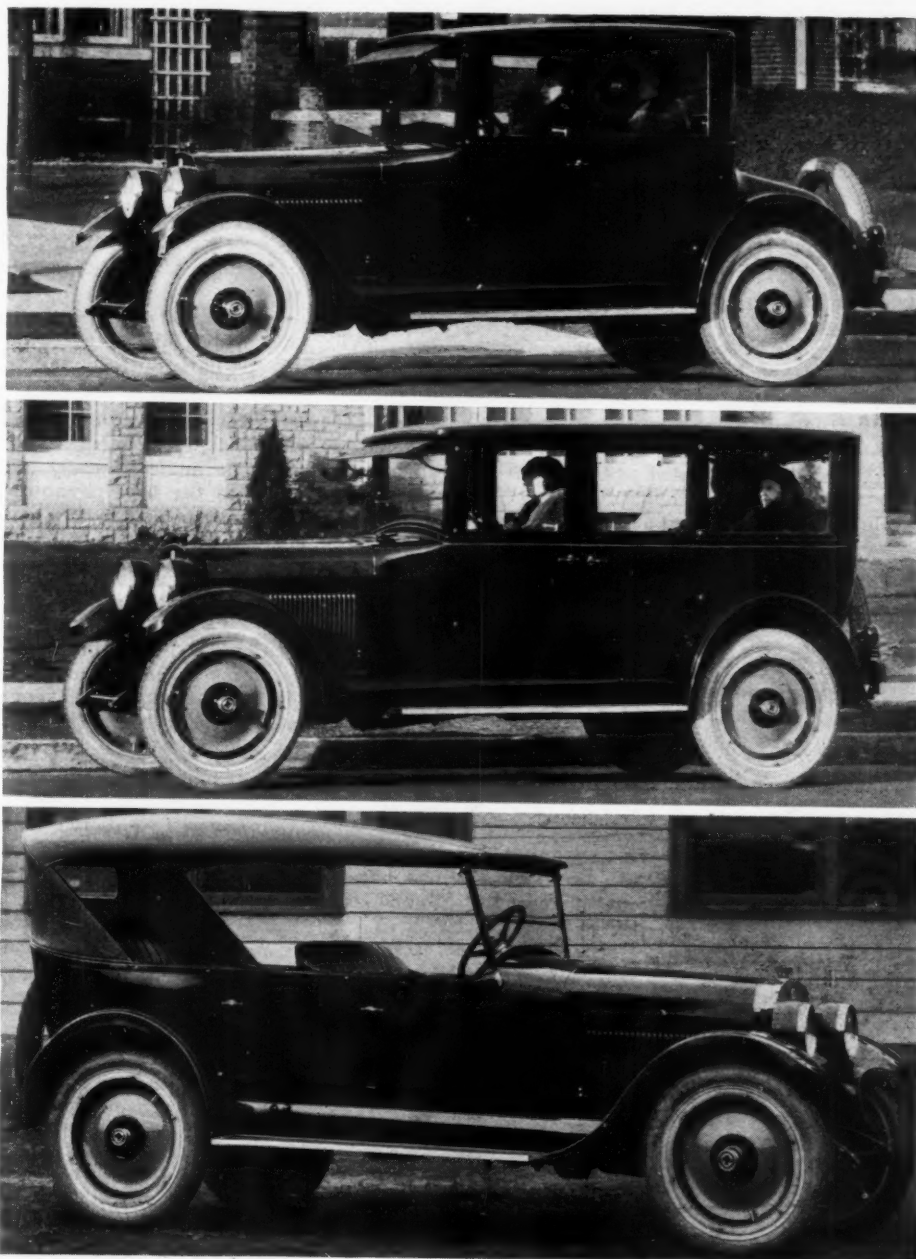
THE second series of Rickenbacker cars is just beginning to come off the line at the factory. A number of detail changes have been incorporated in the A, and a few changes also were made in the last part of the series A run. These are continued in the series B cars, which will be exhibited at the shows this year. Probably the most important change made in the car this season is the adoption of an entirely new clutch.

This is a disk unit which is designed along conventional lines except that an innovation is made in that the pressure plate forms one abutment for the springs and a movable part forms the second abutment. The movable part is connected to the pressure plate by linkages which provide a 4 to 1 leverage between the springs and the pressure plate. Inasmuch as the initial pressure is also present and the springs act on the pressure plate at the same time, a pressure of five times the actual spring tension is available. In other words, with three 110 lb. springs, as now used, a pressure on the friction rings of 1650 lbs. is secured.

From a maintenance standpoint, the friction rings are interchangeable with the conventional disk clutch, so that service may be had on them in practically any city. This is one of the advantages claimed over the cone, which has been displaced because in the case of the latter new facings had to be purchased from the factory and could not readily be secured elsewhere.

A second feature incorporated in the new Rickenbacker clutch is that the pressure plate is positively disengaged from the friction rings instead of being allowed to float away, as is the case with the majority of single plate clutches. The driven plate has straight arms and therefore has the advantage of lightness. The revolving weight, therefore, against which the gear shifting must be done when the clutch is disengaged, is kept at a minimum. This is also an advantage over the clutch, which has been displaced as considerable drag was experienced in gear shifting.

In the servicing of this clutch, adjustment is made after the faces are worn about half away and the slippage becomes noticeable by removing six shims to allow the plate to be screwed in another 1/16 in. This permits the facings to be used until the balance of the surface is worn away.



*Rickenbacker Series B Phaeton with new permanent type top of semi-rigid construction  
Four-passenger coupe mounted on standard Series B Rickenbacker chassis for 1923  
Five-passenger sedan which is mounted on the standard Series B Rickenbacker chassis*

The only change in the power plant is in connection with the carburetor, which has been equipped with a new type hot-air stove and an air cleaner as standard equipment. A claim of an increase in from 2 to 5 per cent on the dynamometer

in actual horsepower is made for the new construction. The air cleaner, which will now be fitted as standard equipment, is an air velocity type designed to remove the particles of foreign matter from the air taken through the



carburetor into the engine. This is the second make of American car to adopt a cleaner as standard equipment.

The Rickenbacker company, in adopting this cleaner, states that by actual tests, metering the air, it has been shown that an automobile consumes nearly twice its own weight of air in 10 hrs. at 35 miles per hr. If each cu. ft. contains 1 gr. of dust, according to this, there would pass through the cylinders of a car weighing 2500 lbs. approximately 1 lb. of dust per hr. As the quantity of dust suspended in the atmosphere varies greatly, it is, of course, impossible to predict actual extractions to be expected.

A very interesting citation is given by the Rickenbacker engineering department, however, in which it is stated that by an apparatus invented by Mr. Aiken in 1880, that the cleanest air ever found contained 16 dust particles per cu. cm., and in cities the numbers were found to be as many as 210,000 lbs. per cu. cm. There are 315,000 cu. cm. per pound of air, or 73 billion dust particles per pound of air. By analysis of carbon deposit it has been found that as high as 90 per cent of the carbon deposited on cylinder and head walls is sand. Tests of the cleaner have been made by government engineers in connection with tractor development and the average of ten best efficiencies was found to be 99.91 per cent at engine speeds of from 400 to 1200 r.p.m.

Bosch electrical equipment has replaced the former units employed. The automatic advance feature is incorpo-

rated in the distributor head and is so constructed that the weights employed are heavy enough to break loose a gummed bearing in case of heavy oil. The Bosch units are of standard Bosch construction and are familiar to the industry.

A number of detail improvements have been made through the chassis and body, the rear axle, for instance, having been equipped with brake anti-rattlers. Flat springs have been added to the top and bottom of the brake bands with supporting members riveted to the brake dust cover as an anti-rattle feature. These also hold the bands free in the drum, helping to eliminate brake drag, particularly when the bands have been damaged by a blow. A differential type of brake equalizer with small differential wheels in place of the usual balanced lever has been added, which greatly simplifies the task and renders unnecessary the inconvenience of adjusting brakes behind disk wheels.

In the body construction, trim and equipment, a number of improvements are incorporated in the series B cars. The phaetons are now equipped with permanent tops which are lighter and stronger. With the new top it is claimed that it is possible to secure a better appearance and to eliminate rattles and squeaks due to wind pressure. The side curtains can also be made a neater and better fit. Although the tops cannot be lowered, the viewpoint of the Rickenbacker company on this is that since 91 per cent of the drivers never use the

drop feature, there is not much use in depriving this percentage with the advantages of a permanent top in order to accommodate the 1 per cent who will occasionally desire to lower.

Changes in the wiring have been made so as to secure the Class A rating as regards fire hazards from the Underwriters' Laboratory. An approved transmission lock has also been built into the transmission pedestal which will materially reduce the insurance rates. All nuts, bolts, screws and other parts which have previously been touched up after assembly, are now rust-proof, giving them a finish which does not require touching up and consequently daubing of other parts.

The toe-boards on all of the models have been changed to aluminum for appearance and to protect the front compartment from heat coming from below, as an asbestos installation has been incorporated in the toe-board. All the molding used on the phaetons are of cold drawn metal stamped to shape and enameled, giving a mahogany finish. Rear view mirrors have been added to all the cars as regular equipment and all of the closed models are now fitted with perfection heaters as standard equipment. The radiator shell on the phaeton has been changed to nickel plate for the sake of appearance.

The original specifications of the car remain unchanged, the entire unit being as previously manufactured with the exception of the alterations denoted herewith.

## Auburn Has New Two-Door Brougham

The Auburn two-door brougham has been put into production by the company



Interior of Auburn Brougham, showing tilting seat. Right: Large trunk mounted on rear

for addition to its 1923 line. One of the most noticeable items in connection with the new car is its low appearance combined with ample head room. The windows and doors are made as large as possible, the former being 28 in. wide giving 22 sq. ft. of glass. The door is 31 in. wide and, as will be noted from the illustration, allows ample clearance for access to the rear seat by tilting the front seat forward. The rear seat is 44 in. wide, allowing ample space for two passengers, or three averaged sized persons when it is desired to carry five passengers.

The company has seen fit to equip this car with a trunk of large capacity the inside dimensions of which are 37 in. long 11 in. wide and 19 in. deep. Polished

Some of the other features of the car include an overlapping windshield, all

metal visor, with a dull finish underneath to prevent glare, wool upholstery in fast color, extra rubber bumpers on doors to prevent rattle, worm and nut window lifters and cowl ventilator. Standard colors are brilliant blue, maroon and Auburn gray with fenders and flashings of black enamel. This new brougham is mounted on a standard 121 in. wheelbase chassis and sells for \$2065 f.o.b. factory.

## MERCHANDISING PROFITS

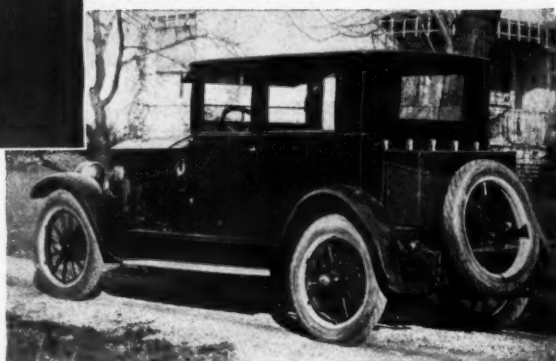
When a business man puts up a building, he installs the best fire protection he can secure and takes out fire insurance. That is good business. But there are many car owners, otherwise good business men, who have no protection, insurance or mechanical for their cars.

The accessory dealer sells fire protection—fire extinguishers. Show the car owner that it is good business to carry a fire extinguisher at all times, it won't be hard to convince him, then sell him one out of your stock.

There is no standard shipping case for fire extinguishers, but the Standardization Committee of the Automotive Equipment Association has recommended 10 unit cases.

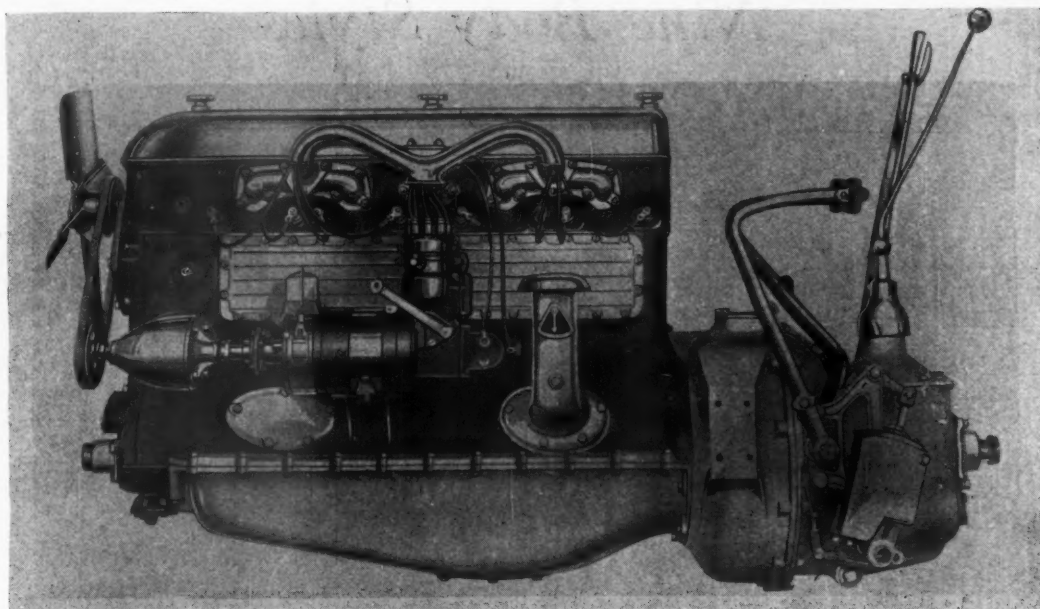
At \$7 each, 10 units will cost you \$70. The first 7, sold at \$10 each, will return your money.

The last 3, sold at \$10 each, will place \$30 on the credit side of your ledger.





## Duesenberg Based on Racing Practice



*A novel departure is the complete machining of the interior of the intake manifold. This is made possible by casting half of the intake in the block, and bolting the outer half in place. The disposition of the wiring is exceptionally neat. Alongside the transmission may be seen the operating mechanism for the Four-Wheel Hydraulic Brakes*

**M**ANY unusual ideas are in evidence throughout the design and construction of the Duesenberg eight-cylinder line car. Most of these are drawn from racing practice, a field in which the designer, Fred Duesenberg, has been accorded eminence for some time.

The valve action, for instance, is of pure racing type modified for application to passenger car service. It is a single overhead camshaft arrangement with a roller and walking beam rocker arm which impinges directly upon the valve, which is set in the combustion chamber at an inclined angle of 48 degrees. This angle and the length of the rockers is stems on the phosphor bronze guides. Drive of the camshaft is by a forward vertical shaft through spiral bevel gears. This shaft is in two sections to permit of removal of the head—a tongue arrangement being employed to guard against error in re-assembly.

The oiling mechanism of the valve action is interesting. The entire camshaft runs in a bath of oil, formed in a channel on top of the cylinder head. Oil is supplied to all rotating parts by pressure through the hollow camshaft and to the valve stems and rocker arms.

Another interesting feature in connec-

tion with lubrication is that of the cylinder walls. Small holes are drilled diagonally through the connecting rod flange at the base of the rod. These holes register with the oil holes in the crank pins and periodically, therefore, as the holes come into register two jets of oil are directed against the cylinder walls.



*Forged aluminum brake shoes are employed. The drums are steel forgings. The double steering arm is a sign of the car's racing ancestry. The brakes are completely enclosed in actual practice. Note the entire absence of any linkage or joints.*



*Duesenberg uses a tubular front axle to take the braking torque. The outer ends of the axle are molybdenum steel. The channels for the liquid which operates the brake, are inside the axle, eliminating all flexible joints and connections*

## Courier a Six Cylinder Car Offered in Nine Body Styles

*Company to Build Its Own Bodies. Powerplant Consists of Falls Engine, Borg & Beck Clutch and Muncie Gearset*

**N**INE body styles mounted on a single standard chassis comprise the Courier line. This newcomer into the ranks of automobile manufacturers will exhibit its product at the shows this winter. The company is now in moderate production and has been shipping cars to its dealers for some time. The bodies are made in the shops of the company itself at Sandusky, O. The chassis, which is assembled in this plant, possesses some features which are of exclusively Courier design.

The 116 in. wheelbase chassis incorporates a Falls model T-8000, six-cylinder, valve-in-head engine. This engine is a stock product, with the exception of the fitting of a dry sump oiling system for which some exceptional oil economy claims are made. A bore and stroke of  $3\frac{1}{8} \times 4\frac{1}{4}$  in. give a displacement of 195.6 cu. in. and a horsepower formula rating of 23.44. The engine, it is claimed, develops 46 hp. on the block at 2600 r.p.m. The five-passenger car weighs 2825 lbs., ready for the road, giving approximately  $62\frac{1}{2}$  lb. of car weight for each horsepower. With a standard rear axle ratio of 5 to 1 and an optional ratio of 4.6 to 1, a speed range of from 2 to well over 60 m.p.h. is developed. This is with a 32x4 in. tire.

The Falls engine is familiar to the trade, having been on the market for some time. One of the noteworthy features of the engine is the complete oil circulating system through the overhead rocker arm and through the drilled push rods back to the cam faces, giving a very complete lubricating system for the overhead valve action.

Another deviation from the standard Falls engine is the employment of cast covers for the top and for the valve action. On the standard engines, stampings are employed, but the castings have been substituted for greater rigidity, so as not to be distorted by unusual tightness on the retaining screws. Gasoline is supplied from a 12 gal. tank in the rear of the chassis through a Stewart vacuum system to a Stromberg carbureter. Ignition is by the Atwater Kent system and the starting and lighting system is a Westinghouse. The battery is a USL six-volt, 94 amp. type mounted in a steel cradle under the front floor boards.

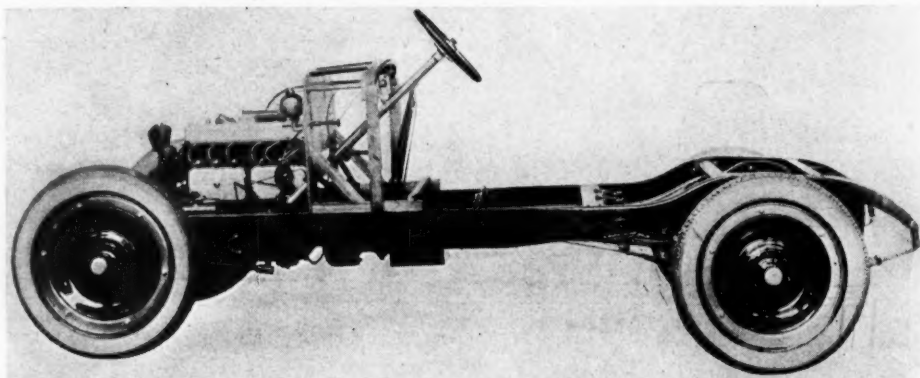
The clutch is a 10 in. Borg & Beck, delivering the drive through a Muncie three-speed gearset, mounted in unit



*Courier sport phaeton which is equipped with Forsythe disk wheels and aluminum steps in place of running board. The equipment shown is standard*



*Five-passenger brougham with single wide door and one aluminum step showing regular equipment*



*Side view of Courier 1923 chassis. The Forsythe disk wheels are standard on the sport model and on the sedan*





*Installation of the Kellogg O. K. Oiling System on the Courier steering knuckle. Chassis lubrication is operated from a central tank located on the front of the dash with a plunger so constructed that one push will force oil to the various parts of the chassis under pressure*

with the powerplant. This gearset is mounted on annular ball bearings throughout. The drive is a Hotchkiss type through a 6½ in. flexible disk universals joints. The rear axle is a Columbia three-quarter floating type mounted on annular ball bearings. The front axle is a Peru. The steering gear is a Lavine, irreversible worm and wheel type with an 18 in. hard rubber steering wheel designed particularly for this car. It is a thin grip type with the Lavine center control in which the spark and throttle levers are mounted on the steering wheel hub.

The pressed steel, channel section frame is 7 in. deep at the center, with 1½ in. flanges, and the stock is 5/32 in. in thickness. The cross-members consist of three pressed steel channel unit and two reinforcement tubes, the rear tube being 3 in. and the front 2 in. in diameter. These are mounted in sockets bolted to the frame and as a measure of rigidity, it may be mentioned that a rear corner of the frame can only be lifted a little over ½ in. before picking up the entire frame. This represents the distortion, due to the weight of the frame supported in this manner.

Semi-elliptic spring suspension is employed, the front having an alloy steel main leaf. High carbon steel is used for the remaining leaves. The length of the front spring is 36¾ in. and the width 1¾ in. The rear spring is chrome vanadium steel throughout, 53 in. in length and 2¼ in. in width. The wheels are artillery on all standard models with Stanweld rim. Forsythe disk wheels or wire wheels are standard on the sport model. The tires are 32x4 in. non-skid cord, front and rear.

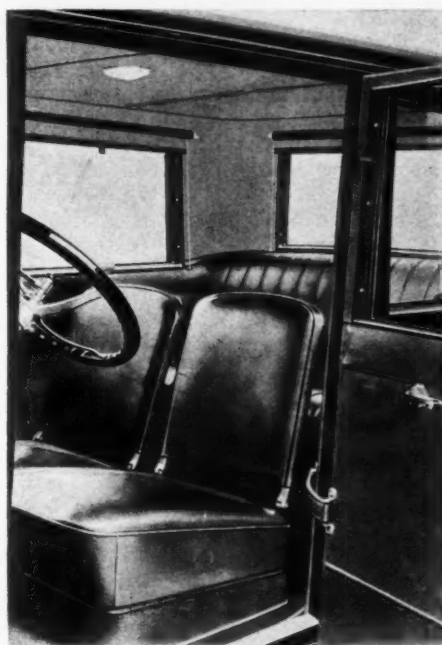
Kellogg automatic chassis lubrication is installed, this being operated from a

central tank located on the front of the dash, with a plunger so constructed that one push, after the system has been filled, will force lubricant to the various parts of the chassis under pressure. With the use of the flexible disk universals, the usual grease cups have practically been eliminated.

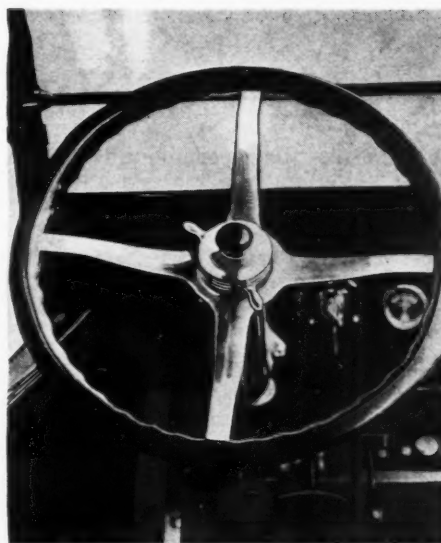
All of the body work is handled in the Courier plant, which is equipped with a complete wood-working and paneling department. The bodies comprising the line include a five-passenger phaeton selling for \$1395; three-passenger roadster selling for \$1295; three-passenger sport roadster, \$1395; three-passenger coupe with extra folding seat, \$1965; five-passenger DeLuxe sedan, \$2165; four-passenger sport, \$1495; sport phaeton, \$1475; five-passenger brougham, \$1995, and special sedan, \$1850, all being f.o.b. Sandusky.

The colors supplied are Baltic green, maroon, azure blue, moleskin and dark blue. The upholstery on the open cars is real leather with Spanish finish throughout. On the enclosed cars, imported fabrics are employed. The bodies are practically custom built, as with the limited production, the body manufacture is entirely by hand work.

A feature of the policy of the Courier concern is to give each car a thorough road test before shipment. From three to five hours are spent on each car by the inspectors before it is passed and an endeavor is being made for uniformity in carburetor and ignition setting, as well as thorough rattle inspection. The standard equipment includes spare rim, tool kit, jack, tire repair kit, starting



*The interior of the five-passenger Courier brougham, showing the individual seats in front and roomy rear seat. The body is made at the Courier body plant in Sandusky and sells for \$1995 at the factory. Imported fabrics are used in all of the enclosed models' upholstery*



*Center control which replaces customary spark and throttle levers on Courier car*

crank, rim wrench, switch keys, curtain rods, windshield wiper and spot light on the sport models.

## Changes Mark 1923 Gramm-Bernstein

Several important changes have been made in the 1923 line of Gramm-Bernstein trucks. Model 10 Speed Truck will be equipped with an engine of slightly larger bore, this being 3¾ in. instead of 3½ in. The stroke remains the same, 5 in. The engine will have a five bearing crankshaft, full force feed oiling to all bearings through drilled crankshaft, by means of gear driven oil pump, removable head, hot spot manifold, high sight oil gage and all moving parts enclosed.

Model 65, 1½-2 ton worm drive formerly engined with the Continental Model N, 3¾ by 5 in. will in the future carry the new J-4 engine of same size but with drilled crankshaft, gear driven oil pump, force feed oilings and hot spot manifold, while this model will continue to be regularly built with North East electric system and Exide battery it will also be furnished with Elsmann magneto, in connection with electric lights and horn, as an extra.

The emergency brake, which formerly operated on the rear brake drums, will hereafter be of ventilated shoe type and operate on the front propeller shaft, leaving double the braking surface in rear drums available for the foot service brakes, thus insuring easier and better control, with less wear on brake lining.

In model 20, 2-2½ ton, the former Continental C-2, 4½x5¼ in. engine will be replaced by the K-4, of same size. Emergency brake will also be changed from rear drums to propeller shaft and the double braking surface in rear drums will be used for service braking.

Along the lines of seeking economy in operation heavy duty models (3 to 6-ton) will be equipped with Gramm's patent fuel economizer will be added to the model 20 also, without extra charge.



## New Midwest Six Cylinder Passenger Car Engine Announced

A NEW six-cylinder engine to be known as model Number 610 and having a bore and stroke of  $3\frac{3}{4}$  by 5 in. respectively, has been announced by the Midwest Engine Corp., Indianapolis. The engine has a piston displacement of 268.4 cu. in. and is said to develop 70 hp. at 3000 r.p.m.

The crankshaft is  $2\frac{1}{2}$  in. in diameter in all bearings, the length of journals being  $2\frac{1}{4}$  in. front,  $2\frac{1}{2}$  in. center and  $2\frac{3}{4}$  in. rear. The connecting rod crank pin bearings are  $2\frac{1}{2}$  in. diameter and  $1\frac{3}{4}$  in. long while the piston pin is 1 in. diameter and bearing full floating in rod as well as in the piston, bearing metal plugs being pressed into the ends of the pin to prevent cylinder scoring.

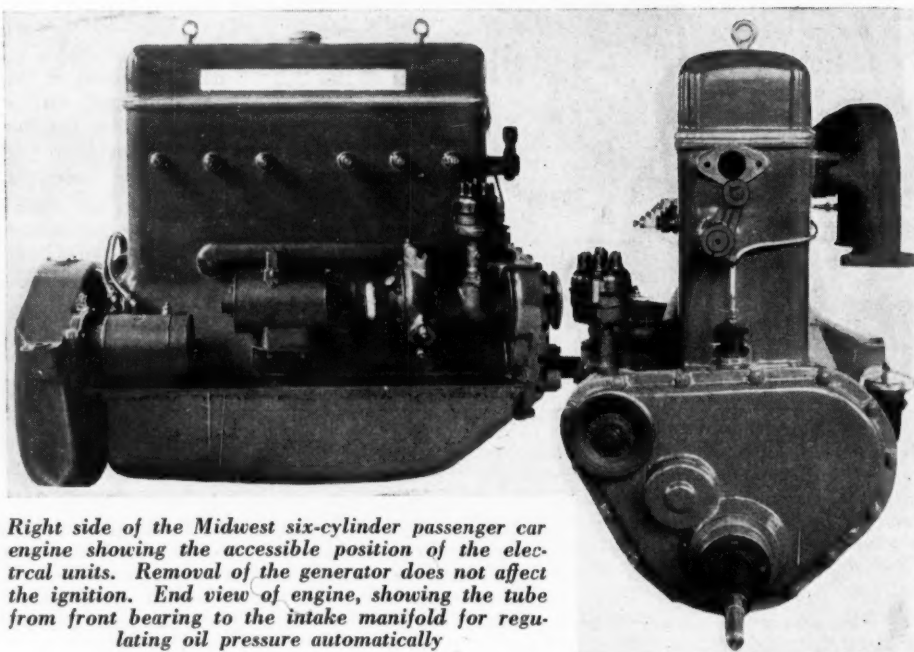
The pistons are grey iron, light and  $4\frac{9}{32}$  in. long. From top of head to center of wrist pin hole measures  $2\frac{15}{32}$  in. This allows less ring and ring groove wear and permits of free fitting of piston to cylinder bore. Pistons are properly reinforced and cooled by ribs and for  $\frac{1}{8}$ -in. rings are used, all above the piston pin. The valves are of alloy metal,  $1\frac{9}{16}$  in. in the clear, lift  $\frac{13}{32}$  in., valve stem  $\frac{3}{8}$  in. diameter, length  $5\frac{1}{2}$  in.

Cooling is by pump circulation and the cooling water is directed by internal deflectors first to the spark plugs and then to the valves, circulation is also controlled in such a manner that the greatest volume of water flows from the rear cylinder to the front through the head. This system of cooling permits of high compression being used.

### Automatic Pressure Lubrication

Lubrication is provided by a constant delivery of oil under pressure, to all bearings, the pressure being regulated automatically in proportion to load instead of speed. This brings about greater economy in oil consumption, it is said, because when the vacuum above the pistons is high, idling, the oil pressure and supply is reduced; when vacuum above pistons is low, full load, the oil pressure and supply is greatest no matter at what speed the engine may be operating at the time the load is thrown on. In this way "oil pumping" is practically eliminated, the company states.

No scraping is done in any bearing. The seats for the bearings in the crank case are turned with diamond point tools; the steel backed bearings, however, are ground so that when placed in their seats in the crank case they fit so accurately no additional operation for alignment is necessary. No shims or oil grooves in bearings are used. The full area of each bearing is therefore available for carrying the load, furthermore this system makes a uniform clearance over the full circumference of each



Right side of the Midwest six-cylinder passenger car engine showing the accessible position of the electrical units. Removal of the generator does not affect the ignition. End view of engine, showing the tube from front bearing to the intake manifold for regulating oil pressure automatically

bearing for the oil film. A clearance of .004 in. plus or minus .001 in. is provided in each bearing for oil, the oil being forced into it continually, under pressure, the pressure being proportionate to the load on, not speed of, the engine.

This oil pressure control is automatic in operation and is arrived at by the following means: A small cylinder is mounted over the front bearing; in this cylinder is a loose fitting piston on top of which is coiled a spring, the function of the spring being to hold the piston down, yet at the same time to act as a safety control valve on the pressure line. From the top of the control valve is a small copper pipe leading to the intake manifold above the throttle valve. Around the front bearing is a groove, a hole leading from it upward toward the cylinder above mentioned, a valve seat being formed on the top of the hole. A valve stem fitting into the piston rests on this valve seat normally.

### Oil Circulation

The oil is pumped from the sump through a geared pump to a groove around the rear bearing. The shaft is drilled completely through, the holes in the front and rear bearings registering throughout the complete revolution of the shaft with the oil grooves mentioned. Oil enters the shaft at the rear bearing and is forced to each crank pin and main bearing. At the outlet at the front bearing which is provided under the regulating valve above described it has outlet into the front chain drive compartment.

With the throttle in idling position the vacuum above pistons and in intake

manifold is eight pounds or better, this being sufficient to overcome the spring tension on the oil regulation piston thus lifting the piston and valve, allowing the oil from the shaft free outlet. This action drops the pressure on the oil line but does not reduce the volume flowing as that is proportionate to the pump speed.

### Regulation of Pressure

When the throttle is opened the vacuum in the manifold is lessened and as this condition is increased the point is reached at which the spring becomes the stronger and gradually forces the oil valve closed cutting off the free outlet and thus raising the pressure on the entire oil supply line. When the throttle is wide open the vacuum is then but about one pound and the spring holds the oil outlet valve closed at the maximum spring pressure thus increasing the pressure on the oil flowing through the shaft and all bearings to the maximum pressure, approximately fifty pounds.

The camshaft is driven by silent chain with automatic adjustment. Valves are located in the detachable head, provided with large water cooling space and long guides. The push rods are carried inside the cylinder block instead of in tubes as in the four-cylinder models, the entire valve mechanism being lubricated by oil mist and vapor forced up from the crank case. The rocker arms are of the "rocker" type, not carried on round journals, but against flat-headed adjusting screws, the surface on the arms being curved so as to actually rock like a rocking chair, a centering point in each being used for holding in alignment.

## Columbia Brings Out Three New Body Types

*Complete Equipment, Including Nickel-Plated Radiator Shell, Automatically Controlled Shutters, Cowl Lamps, Ventilator, Barrel Headlamps, Etc. Features of New Models. Khaki Top Adds Attractiveness to Sport Model*

THREE new body types on the Columbia light six chassis have been announced for 1923. The entire line will include six models. The new models include a two-passenger coupe at \$1235, a special sport at \$1395, and a sport roadster at \$995. There is also the special six phaeton. The chassis specifications remain the same.

The touring car has a new and roomier body and the car is much more complete in detail. It has heavy crown fenders, cowl ventilator, barrel head lamps and cord tires. Wood wheels are standard but disc wheels can be had for \$30 additional. The finish is a dark blue with black running gear.

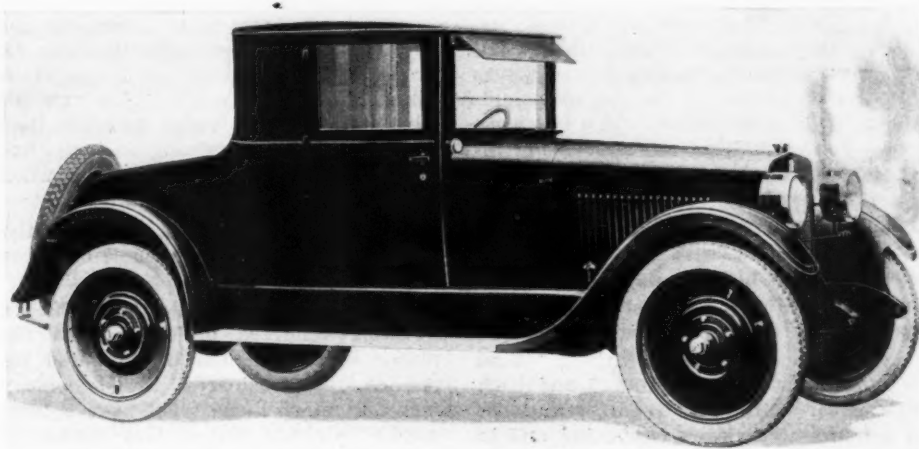
The special six phaeton is designed for those who desire extra roominess and equipment ordinarily listed as extras. Upholstery is of machined buffed leather and the top is of pantasote. The rear seat is 46 in. wide. Equipment includes a nicked radiator with automatically controlled shutters, moto-meter, cowl lamps and ventilator, barrel headlamps and cord tires.

The Columbia Special Sport is finished in maroon or Columbia blue and has a khaki top. Upholstery is of genuine Spanish leather and the car is completely equipped with touring trunk, mirror, windshield wiper, sun visor, bumpers, transmission lock, parking lamps, scuff plates, trunk bars and the usual equipment offered on the other models.

The Sport Roadster selling for \$995 is finished in Murphy red. The rear deck slopes gracefully to the chassis and the lines of the car are preserved by mounting the spare tire flush with the deck. Two locked side doors give access to a large luggage compartment. Upholstery in this model is genuine leather.

The company also makes a two-passenger coupe the body of which is finished in Columbia blue with black hood and fenders. It is hung low on the chassis for greater road ability and graceful appearance. Upholstery is of genuine leather and the seat backs are of form fitting design. The doors are very wide and a large luggage compartment is located under the rear deck. This car is also quite completely equipped.

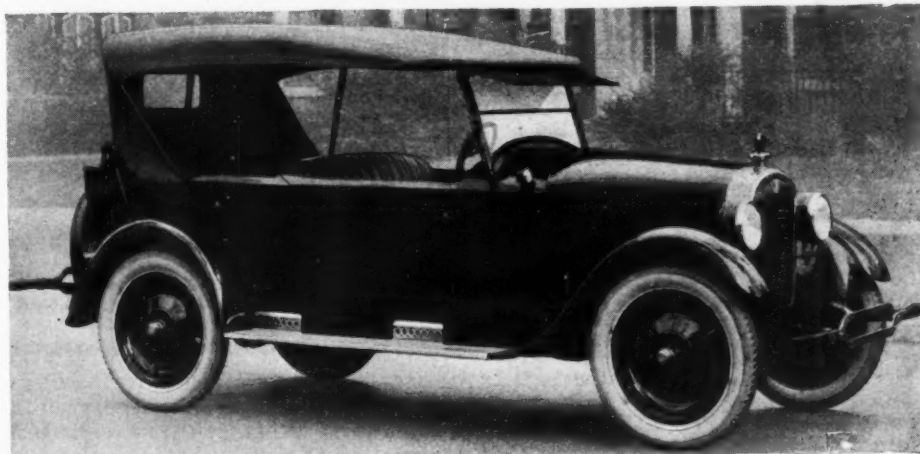
The light six sedan listing at \$1395 has been redesigned for 1923 particularly as to the body lines and the provision of more room. This car, like the other models, is fitted with barrel headlamps and cowl lamps, dome light and other attractive equipment.



*The Columbia two-passenger coupe a neat body job with large luggage space in rear*



*The sport roadster, which is upholstered in genuine leather. The car is finished in red*



*Columbia special sport model which is finished in Spanish leather and has a khaki top*



# How Automotive News Is Judged

*Automobile Editor of St. Louis Globe-Democrat, in Address to Distributors, Advises Them to Read Publicity Matter Factory Sends Them Before Offering It for Publication*

By JOHN C. LEBENS

A GOOD newspaper editor once defined news as "Any hitherto unpublished happening that involves the breach of one of the ten commandments." That definition, while it covers some of the real hot news, does not include marriages, deaths, honest politics, religious news and much other real news including automobile news.

I agree rather with the definition of news as "Any hitherto unpublished happening of interest to the readers of the publication."

And then the question arises, "What is of interest to the reader?" and each newspaper editor and reporter answers it for himself in each happening and in each feature of each happening. And as he answers it right or wrong his paper profits or loses. The newspaper man who judges correctly stays in the newspaper business and the newspaper man who judges incorrectly goes out of the newspaper business.

Then, whenever afterward the man who went out of the newspaper business runs across a newspaper reporter, at a convention or anywhere, he tells him, "You ought to print this and this. I know the newspaper business. I was once a newspaper man myself." When I happen to be the newspaper reporter to whom he tells this, I am always reminded of that good old story about the lad who had served for one week as office boy in a law office and came on Saturday to his employer and said, "I'm going to quit this job tonight."

"What's the matter?" his employer asked him. "Don't you like the work?"

"Oh, the work's all right," the boy answered, "but there's nothing to the law business. I'm sorry I learned it."

Before I became automobile editor of the Globe-Democrat in May, 1913, I had at various times handled the real estate news, the insurance news and the news of the banks, the stock exchange and the grain exchange. Automobile news resembles this business news but is vitally different in that a large volume of advertising is involved. Often the automobile factory and the advertising agency which places the advertising, firmly believe that a certain amount of editorial space is, or ought to be, given free as a gratuity with the advertising, as the grocers in New Orleans are said to give "lagnappe," a few pieces of candy to the child customer.

The factories or agencies prepare this free matter in advance. Dealers have

handed me a series of advertisements and with them a series of publicity items all prepared by the factory or its advertising agency and they said, "Now run this ad and this item Monday and this item and this ad Tuesday," and so forth, and they showed the utmost surprise when they were told, "Nothing doing."

"Why," they exclaimed, "an advertising agency got that up and it ought to know what's right."

Some of these publicity producers, working hundreds of miles from the places where the matter is offered for publication, have learned the elementary fact that news items must have a local reader interest, that a tiny cinder in your eye is of greater interest to you than the big mountain Fujiyama in far Japan.

So these publicity producers aim to add a local interest by bringing in the local dealer and they leave blank spaces in their publicity in which are to be written the name of the dealer, the name of his company and the name of the city where the prospective readers are. The dealer fills out the spaces correctly and is charmed at how easily the newspaper business is learned and at how well the factory and its advertising agency take care of his interests.

But, does the dealer read the matter? He does not. Often I have put into my pocket the publicity matter as it was handed to me and asked the dealer, "What is it about?" He reaches for the paper and when I withhold it he confesses, "Oh, just bunk, I guess. I didn't read it." Yet he expects my readers to read it and feels aggrieved if nothing appears in the paper.

Automobile editors I have met at the shows have told me that they throw away unopened the news letters addressed to the automobile editors if the return card shows they are from a non-advertiser. I do not. I never in my life threw away a letter unopened. However, the vast stream of worthless stuff often causes one to overlook a real news item.

An automobile editor in St. Louis said to me once, "What do you go to so much trouble for? I just take the stuff the advertiser hands me and stick it in the paper." He lasted about three months.

My advice to the dealer is to read the matter sent to him by the factory. If he cannot read it with sustained interest, let him use his own waste-basket on it. It is not what is put in the paper but what

the reader reads that helps the dealer and the automobile business. Let him keep his bright eye open for matters in his own business and his own town that he believes to be news and communicate them to the automobile editors. If he communicates in writing, let him leave spaces between the lines so that changes may readily be made, even though the spaces do make the writing look longer.

Let him not feel aggrieved or disgruntled if a competing dealer produces more news than he does. Any real automobile news that is printed helps the whole automobile business. And let him not forget the year 1920, when for many months most of the important newspapers in the big cities of the United States discontinued their automobile news departments entirely as the easiest way out of a serious mess.

## Abnormal Wear of Valve Seats Caused by High Temperatures

Unless gasoline engines are so designed that the heat generated by slow burning mixtures or pre-ignition is rapidly dissipated, the exhaust valve seats may reach such temperatures as to cause excessive wear on these parts.

The Bureau of Standards of the Department of Commerce has recently conducted an investigation to determine the cause of excessive wear of exhaust valve seats of certain engines. This condition only occurred in engines of a certain type and all engines of this type were not affected nor was the wear of all the exhaust valves of a single engine the same.

After numerous experiments to find a cause for this trouble, including an inspection of the metal from which the cylinders were made and a study of the design of cam and valve spring, it was found that the difficulty was due to the high temperature attained by the metal. When the valve and seat were heated to a high temperature by a reducing flame, the wear of the seats was sufficiently rapid to amply explain the difficulty. After this probable cause of the trouble was determined, it was found that the cooling of the valve seats which showed the greatest wear was somewhat defective, thus permitting them to attain an excessive temperature under conditions which often occur in practice.



# Plating and Polishing Department a Profitable One When Properly Managed

*One Distributor of Cadillac Cars Is Helping to Make Maintenance Pay by Replating and Polishing Such Parts as Bumpers, Lamps, Door Handles, Robe Rails and Reflectors*

**T**HERE is a growing tendency among automotive concerns which do much general repairing, trimming, bodymaking and similar work, to have their own nickel-plating and polishing, or finishing department. When finances warrant it, the establishment of such a plant under the same roof with that of other maintenance work is desirable and particularly satisfactory, because of the better opportunity for thorough work of the highest grade under expert supervision, including the use of the best equipment and reagents, and for getting the work done on time, which can not be controlled when such work is "farmed out" to another shop. It is very easy for inept workmen to bungle a nickeling, or a finishing job and when a concern has its own tried workmen under a competent foreman, such danger is almost entirely eliminated.

A good example of a model plating department is that of the Neel-Cadillac Co., distributor of Cadillac cars in the Philadelphia territory.

A large part of the work done consists of operations on bumpers, bumper ends, windshield parts, robe rails, door

handles, hinges, lamps, reflectors, and the like, and there is, of course, both "new work" and "old work," such as replating.

The plating department consists of three distinct sections, each occupying a different room. These are:

- 1—The acid, or stripping room.
- 2—The plating room.
- 3—The polishing, or finishing room.

The stripping room is for "old work," or where the work is prepared for replating. It is 8x12 ft. and contains two huge earthenware crocks, of 35 gal. capacity each, one crock placed at each end of a big tank partly filled with water. These crocks contain a mixture of muriatic, sulphuric and nitric acid. By immersing in one of them the article to be treated, the old plating is removed by the action of the acid, which, however, does not affect the base metal.

After the article has been immersed in the first crock of acid until all the old plating has been removed, it is taken out, rinsed in the water in the tank between the two crocks and immersed in the second crock, the acid content of which has the effect of greatly bright-

ening the surface, as well as thoroughly cleaning it.

On leaving the stripping room, the work is then ready for replating in the plating room.

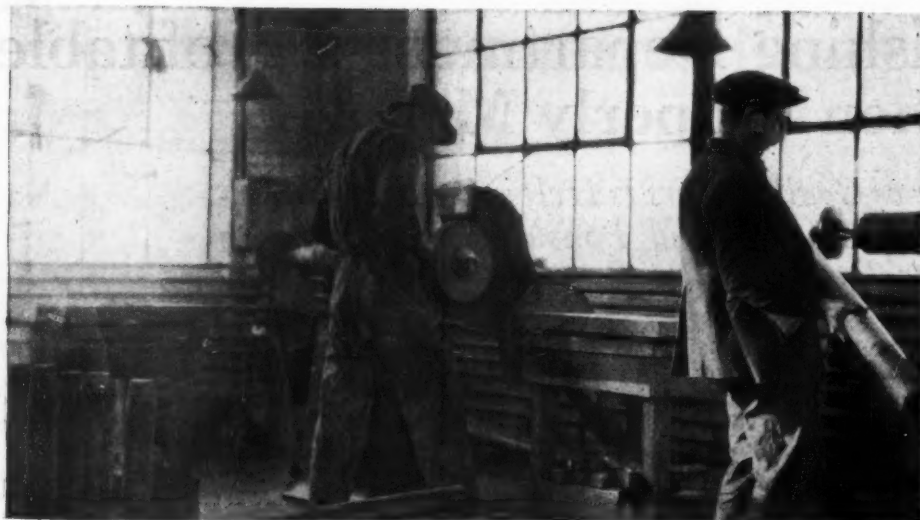
While many concerns replating over old nickeling, the Neel-Cadillac Co. service department does not consider this workmanlike procedure. Thoroughly removing the old plating and doing the job complete, from the start, is always more satisfactory in the end, as replating done by this method is more enduring, as well as superior in general appearance.

The length of time for immersion in the acid bath operation varies considerably, according to the article being treated. Head-lamps, for instance, if poorly plated in the first place, take but fifteen minutes, on an average, to strip off the old plating. If the original plating was properly done, it will ordinarily take a full hour to strip it. It takes approximately half an hour to strip off old brass plating and three-quarters of an hour to remove old coppering in the acid bath.

Re-nickeling is done in this plant on many bumpers, the special bumper ends



*View in the plating room of the nickeling department, showing battery of plating and rinsing tanks*



*Buffing bumper tubes and the circular castings used for bumper ends are among the operations performed in this room of the nickeling department. Several grades of emery and emery compounds in paste form are used on various kinds of wheels revolved at 1800 r.p.m.*

being re-coppered. The type of bumper used by the Cadillac is a steel tube 4 ft. 9 in. in length and 3 in. in diameter. These tubes are purchased in a rough-turned and unfinished condition, and must be polished in the finishing room. The bumper ends are rough, circular castings having the company symbol in the center and require preliminary treatment before being coppered and adjusted to the extremities of the tube.

Low racks equipped with a dozen thick, upright pegs, over each of which may be slipped a polished tube, run on castors, the whole being easily conveyed to the plating room, the tubes then being in an easy position to remove from the rack, as well as occupying a minimum of space, because of their standing upright. While waiting to be polished, the steel bumper tubes are laid in an orderly and compact pile on the floor of the finishing room. As fast as an operator completes the polishing operation, he slips the tube end over one of the upright pegs on the bumper rack and when the rack is full, it is wheeled into the plating room. At present the finishing department has two buffing machines, 15 hp. Optimus lathes.

### **Buffing Operations**

The rough-turned steel bumper tubes are carefully buffed before plating, on various types of wheels used on the lathe spindle. They are put through some half-dozen preliminary buffing operations, including treatment by 18-ply, unbleached muslin buffs, 14 in. in diameter and sewed at the arbor hole, which is 1 in. in diameter. The faces of these buffing wheels vary from  $\frac{1}{2}$  in. to 3 in. in width and, as is the case with virtually all the buffing wheels used in this department, are rotated at the rate of 1800 r.p.m.

The grade of the muslin used in the buffs for this work is such that it gives a very hard cutting edge with considerable flexibility. The count and weight of the muslin used make it an especially desirable wheel, the edges standing up

to the work and maintaining a good working surface on the wheel.

Experience has shown that it is better to use a buff, the cloth of which has a close weave and is made up of strong and tightly twisted fibers, which insure superior cutting qualities and longer life for the buff. Other types of so-called "rag" wheels are used, such as white cotton discs sewed together around the arbor hole, the discs standing out stiffly when the rate of speed is high.

For buffing of this character, to take the "creases" out of the steel bumper, for instance, emery paste, principally compounds in tubes, is applied direct from the mouth of the tube to the face of the wheel in action, there being no lubricant piped to the grinding wheel in these operations. Tripoli, White Diamond, crocus and rouge are among the abrasives used in buffing.

In some operations, sewed cloth and sewed duck wheels are used, the discs being cemented together under pressure, to give the thickness desired. They may be used for heavy buffing and for cutting down, with Tripoli composition, or set up with emery and used as a polishing wheel. There are also cemented canvas wheels, with an outside cover, making a flexible and durable polishing wheel. Also employed for polishing operations are felt wheels which, when set up with glue and emery, can be used even for roughing out and grinding; or, when used with crocus, rouge, or polishing compounds, can be used for obtaining the highest finish and for coloring.

Then there are also "bull neck" wheels, made in thin layers of selected oak-tanned red bull neck leather carefully cemented together, which may be used in many places where felt wheels are employed. Loose and stitched sheepskin wheels, conforming to the shape of work having an irregular surface, and also solid sheepskin wheels, made up of whole discs of a good grade of sheepskin, are extremely pliable and find

ready use on work having uneven surfaces or requiring a fine finish.

A sheepskin wheel is used in "brushing up" a bumper just before it is removed to the plating room. There are also leather-covered, wood, polishing wheels, in which kiln-dried lumber is used, with alternate layers built up with the grain running at right angles. The wheels are placed in a heavy hydraulic press, kept until dry and cool, and then dowels are driven in. The covering is of selected heavy oak-tanned leather. Walrus hide wheels also are used without set-up when a fine finish is desired, or with an emery set-up for cutting down, or with crocus or rouge for finishing or coloring. The wooden wheels are used especially for getting into corners of the work where the wheels of cloth material prove too resilient.

When an "emery wheel" is spoken of in this department, it does not refer to an emery wheel in the sense in which the ordinary tool grinder knows it, but merely as a set-up wheel having emery on its surface.

Four grades of emery are used: No. 90, No. 120, No. 150 and Turkish meal flour. The buffing operations alone on a single bumper will occupy a full hour, while both the plating and polishing operations together will consume from an hour and a half to an hour and three quarters, under ordinary circumstances.

### **Setting Up Abrasive Wheels**

With regard to setting up an abrasive wheel of the types mentioned, the approved method is to place a mandrel, or a long piece of wood in the arbor hole and apply, with a brush, hot glue of about the consistency of molasses. After this has been applied evenly to the face of the wheel, the wheel is rolled several times in powdered emery of the desired grade. The wheel is then allowed to dry for 8 or 10 hours, without artificial heat.

Each grade of emery is kept in a separate box, with the number plainly marked on it and separate glue pots and brushes are kept for each grade of emery, so that no coarse emery may adhere to a brush and be applied to a wheel coated with a finer grade. Another plan is to set up the fine wheels first and then progress regularly toward the coarser ones, eliminating the possibility of getting coarse emery on a fine wheel.

The rough bumper tubes, after being cleaned, and buffed for the first half-dozen operations on the grinding lathe, are sent to the nickeling room to be nickeled, galvanized, or coppered, after which they are returned to the polishing room to be finish-polished.

In treating the circular bumper ends, preparatory to plating, the rough surface is first "shinned off" and ground down on one of the emery-treated wheels described; the company symbol in the center is cleaned out and lapped four or five times in like manner. The operation of buffing one of these bumper end castings will take from three to four



hours, but the final polishing operation, in the same room, after being plated, usually with copper, will take but 15 min. The time given, of course, is exclusive of the plating operation.

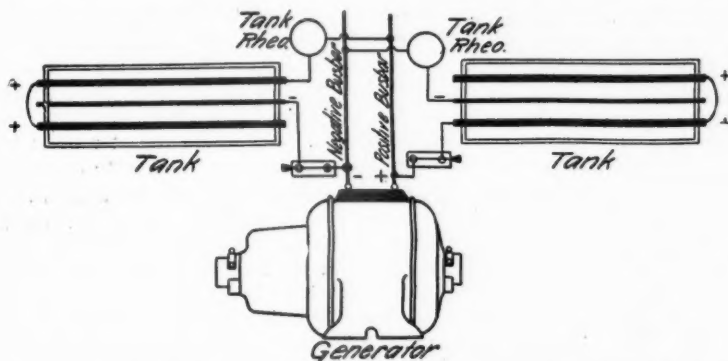
The buffing, or polishing room, is large and lighted on three sides by huge windows. An electric droplight also hangs over each grinding lathe, so that the light falls on the work from behind the operator, or over his shoulder. In addition to the bumper racks mentioned, there are convenient work benches and tables.

### Plating Operations

In the large and notably well-equipped plating room, nickeling, coppering, galvanizing and silvering are done, the latter operation being applied largely to lamp reflectors. In this room, the main equipment includes a battery of cleaning and plating tanks, operated through a motor generator set, connecting up the tanks on a two-wire system, with individual tank rheostats for regulating the voltage on each tank independently.

The generator has a single commutator 300 amp. at 6 volts.

The generator has close regulation from no load, to 25 per cent overload, insuring a uniform metallic deposit at a constant rate; that is, any number of tanks in use can be thrown in or out of the generator circuit without causing the voltage to change. The fields have special compound winding, so that every increase in load causes a heavier current to flow through the series winding, this

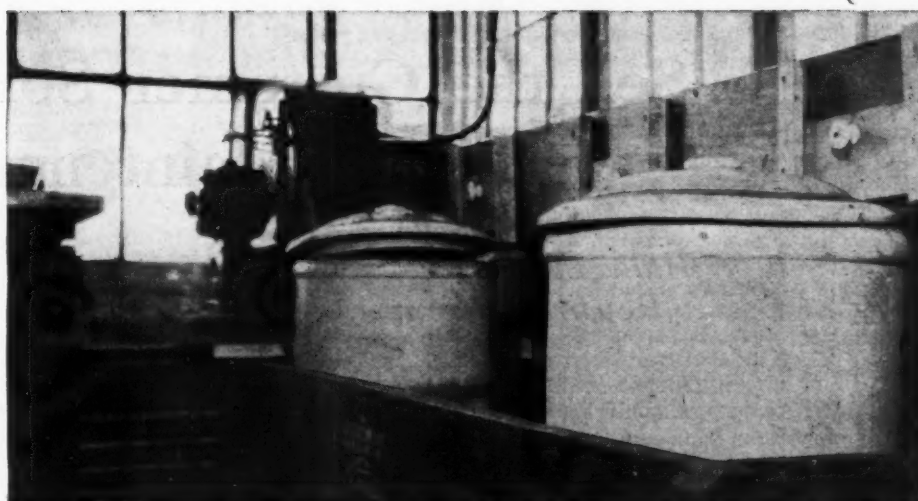


Method of connecting the plating tanks to the two-wire generator. Individual rheostats for regulating voltage on each tank independently

strengthening the field sufficiently to make up for the weakening of the shunt field and also counteracting armature reaction.

The field rheostat permits the shunt field to be adjusted to give the desired line voltage, and, when once adjusted, no further regulation is necessary, the compound winding automatically maintaining a uniform voltage. Probably a voltage of not more than two and a half is used in some jobs.

The equipment used in electro-plating includes the following tanks: A cleaning tank with a capacity of 250 gal. of solution; another tank with a capacity of 200 gal. of hot water; a cold water rinsing tank of 135 gal.; two 80-gal. potash tanks; a still nickel plating tank of 200 gal. capacity; a copper plating



These big crocks, of 35 gallons' capacity each, contain acids in compound for stripping articles of old plating without affecting the base metal, and cleaning and brightening them. They are set at either end of a tank of rinsing water

"starter" tank equipped with a generator pump and having a capacity of 80 gal., for preliminary coppering work; a copper plating tank of 150 gal. capacity; a zinc plating tank of 150 gal. capacity for electro-galvanizing, or depositing zinc by cold process, and two silvering tanks, one used as a "starter," or to get a "strike" in the preliminary work of silvering and containing 80 gal. of solution, the quantity of silver therein being comparatively small; and the other containing 100 gal. of solution in the pro-

ceeds to the nickel plating tank, where it will remain for  $3\frac{1}{2}$  hrs. after the power has been connected. Most of the nickel plating work for the Neel-Cadillac Co. remains in the tank from 2 to  $2\frac{1}{2}$  hrs. Many other concerns doing this type of work consider the plating process complete at the end of half an hour.

After the bumper comes from the nickeling tank, it is again rinsed in a cold water bath to remove all traces of chemicals on the surface and then it is plunged into hot water to complete the cleaning process and so that it will dry quickly. Then the bumper is ready for its final high polishing in the buffing room.

In coppering, the work is left in the special coppering tank from 5 min. to 3 hrs., according to the character of the article.

Silvering is done here in a more thorough manner than in the ordinary plating plant, in that the article is immersed first in the "starter" tank containing a small quantity of the silver, to get the process under way before the work is plunged into the final rich silver solution bath. The difference is shown in the wearing qualities of the plate.

The battery of tanks is so arranged in the plating room, which is large and particularly light during the day because of the big windows, and at night because of electric droplights, that each tank may be worked at from either side. Convenient wooden platforms, made of three heavy, rather narrow boards, or slats, fastened to end and cross-pieces, are placed at the sides, for the workmen to stand on. All wiring is overhead and out of the way and the piping and conduit systems are arranged to take up a minimum of space.

None but skillful workmen are employed, as even in the buffing operations, which appear simple enough to the casual observer, there is plenty of opportunity to ruin material beyond reclaiming for its original purpose. The department is under the supervision of a foreman of broad experience.

portion of 3 oz. of silver to the gallon of water.

Some of the cleaning bath operations are aided by chemicals and electricity. To each plating tank there are two anodes, or positive electrodes, where the current enters the liquid, and one cathode, or negative electrode, where the current leaves the liquid. The work in the tank hangs on the negative rod.

Supposing a new bumper, having been properly buffed, is now ready for the plating room. It is plunged into a caustic soda metal cleaner bath. The bath removes all dirt and other deposit. Without such a bath, the nickel plating put on later would tend to peel.

Next, the bumper will be plunged into the cold water rinsing tank and thoroughly rinsed. After this immersion, it

## Sell the Customer Something Besides Maintenance

*While the Car Owner Waits for Minor Adjustments or Repairs There is a Good Chance for Accessory Sales*

**M**ANY customers would buy accessories for their cars if they were asked to do so and were given a chance to look over a good display of motor car fitments. Often a customer has to wait for several minutes before his car is ready and it is during this period that the best opportunity presents itself for selling him accessories.

The Vesper-Buick Auto Co., St. Louis, which has one of the best maintenance buildings which has worked out very successfully. In planning the arrangement of the show-cases, Manager John O. Lowell, took into consideration the fact that a great number of the cars brought in for minor adjustments would be driven back into the shop, leaving the owner to "shift for himself" until the car was ready.

Three or four comfortable chairs and a bench or two, placed so they face the show-cases, are provided for the comfort of these customers, with the result that the owner who is waiting for a small job to be finished on his car is "asked to buy" through the suggestions offered by the show-case displays.

These accessory show-cases are trimmed and decorated frequently. The accessory department as a whole is kept strictly in time with the seasons, and holidays.

In the first picture, the lay-out of the Accessory Department is shown, with a Buick coupe which has just been driven in for service. The service salesman is taking down the owner's instructions as to what is to be done to the car. The second picture shows a view of the Accessory Department from the opposite side, with the two service salesmen showing




*The recently added accessory department of the Vesper-Buick maintenance department. The arrow points to the service salesman's desk, so located that he immediately can spot a customer driving in*

seat-cover samples and spot-lights to two waiting customers.

"Reminder" cards, are placed in each car as it is finished and turned over to the owner. These cards list almost every possible source of trouble, enabling the owner to check any or all of the items he deems necessary. When he brings the car into the maintenance division, he simply turns the card over to the service salesman, telling him to have the work done as indicated on the card. A new card is issued to replace the old ones, when the work is finished and the car driven out.

In addition to these "reminder" cards, Vesper-Buick is also using a small card which is slipped in between the side of the car and the front seat-cushion, or stuck into the windshield frame, on which some particular phase of maintenance work

Vesper  Auto Company	
Maintenance Division	
West Pine at Vandeventer Lindell 567	
Brakes - Service.	Transmission.
Brakes - Adjust Emergency.	Lock - Motometer.
Brakes - Squeak	Noisy.
Body - Tighten all bolts.	Motor - Misses.
Body - Get out all squeaks and rattles.	Gets hot.
Bumper - Tighten.	Motor - Hard to start.
Bumper - Straighten.	Tune.
Battery - Water in battery.	Motor - Throttle too fast.
Battery - Test battery.	Motor - Jerks at low speed.
Carburetor - Adjust.	Motor - Clean.
Carburetor - Inspect and Clean.	Oil and grease car except crank case.
Carbon - Burn.	Change oil in crankcase.
Clutch - Adjust.	Repack.
Clutch - Wash out and Adjust.	Pump - Tighten.
Clutch - Inspect.	Radiator - Flushout - Leaks.
	Put on upper hose.
	Put on lower hose.

This is a reminder - the things you want done - check items as they come to you and have them done at your earliest convenience so as not to injure your car through neglect. This will also save you time in giving your order at our Maintenance Division.

Name \_\_\_\_\_ Address \_\_\_\_\_

Phone \_\_\_\_\_ Model \_\_\_\_\_

License \_\_\_\_\_ Motor No. \_\_\_\_\_

When this card is turned in a new one will be issued.

*One of the cards which the company places in customer's cars reminding them of some things about which they probably had not thought*





The crank-case of your car should be taken down and cleaned of sediment, the oil lines blown out and the oil pump inspected every six months.

We can do this and put new oil in your crank-case for \$4.00.

The theory of flushing the crank-case with kerosine has been disproved, as has the idea of flushing with oil. This latter method is of no avail and is simply a waste of good oil.

**"Ask the Service Salesman"**

Maintenance Division  
VESPER-BUICK AUTO CO.  
Vandeventer at West Pine

The "reminder" card which the Vesper-Buick company sends to its customers. The latter mark the items as they think of them and have them done as soon as possible

is mentioned, and the price named. The same text appearing on this card is made up in the form of a sign, 24 by 30 in., and hung in the driveway at the maintenance division, where

the owner driving in will be sure to see it.

These cards carry a different message each week, and the large signs are changed accordingly. The suggestions contained in these small cards and in the large sign frequently serve to remind the owner of some item needing immediate attention, or at least suggest attention within a few days.

Without interfering with the service work, salesmen are instructed to push the sale of seasonable accessories at all times. With the coming of cold weather, such accessories as chains, windshield wipers, hood covers and motometers, are given display space, and the sale of these is pushed aggressively. A steel drum of alcohol is placed on display early in the winter, and is kept constantly in sight during cold weather. Customers are reminded that broken cylinder blocks, frozen radiators and water pumps and other damage from frozen water, can be avoided by the use of an anti-freeze solution.

While Buick automobiles, when ready for delivery, are complete so far as the necessary accessories are concerned, there are many owners of both new and old cars who like to dress up their car, or put on additional accessories. The installation of the accessory department has enabled the Vesper-Buick company to supply its customers with everything they want. The customer is able to have his car properly serviced, maintained and purchase his supplies and accessories all at one source.

## Inventory of Used Cars for Income Tax Returns

A DISCUSSION of the method of inventorying used cars by dealers for the United States income tax returns is contained in a bulletin of the National Automobile Dealer's Association sent to all its members as a part of its regular service. The discussion is based on a question asked by one member. The question and the answer follow:

Q—Supposing Jan. 1, we have made enough money so that we have to file an income tax return. Suppose in arriving at our earnings for the year we show an inventory of \$10,000 worth of used cars. These used cars are inventoried at what we allowed for them—suppose that in our own mind we know these used cars will have to be carried until spring and that they will be sold at considerably less than what we have allowed. Is not this "unearned profit?" Would it not be fair for us to shrink this used car inventory in Jan. 1, to a point that we were sure they would sell for next spring?

We have some used car stock that have been inventoried on Jan. 1, at their allowance price and within four or five months, sold at a tremendous loss. Therefore in filing our income tax return are not the used cars on hand "unearned profit?" Should not used cars on hand be classified as "unearned profit?"

A—There is no question of "unearned profit" involved. Profit for the year is the difference between net worth at the end of one year and net worth at the end of the preceding year and of course net worth is the difference between assets and liabilities. Anything added to assets adds to net worth and in the long run to earnings so that while used cars are not and cannot be unearned profit, the value at which they are placed

in the inventory has a very material bearing on the amount of net profit.

With this distinction, which is rather technical, in mind, we can then consider the manner of making up inventories. Under the several rulings two methods can be adopted, "cost" or "cost or market, which ever is lower." The latter method more nearly reflects the true condition because market conditions fluctuate and cost, once established, continues until the article is disposed of for the reason that depreciation does not apply to stock. It follows then that if you have adopted the method of inventorying at cost you must carry your used cars at their cost to you, which under the rulings of the department, is the difference between the amount of cash received and the selling price of the car. Their replacement value or their sales value would have no effect to change your inventories.

If however you have adopted the method of inventorying at "cost or market, whichever is lower," you should return the cars at their actual value. In this connection the department (U. S. Bureau of Internal Revenue, Treasury Department, Washington, D. C.) has ruled that the Chicago Used Car Market reports may be used as the guide to used car values and in determining such values you may take into consideration the length of time they must be carried in stock, the expense of the storage furnished, cost of repairs, salesmen's commissions and any other item which might influence their value.

### 138,000 Cars and Trucks on Penn. Farms

Farmers of Pennsylvania own 138,000 cars and trucks, according to a survey of the Department of Agriculture of that state. This is an increase of 61 per cent since the U. S. Department of Agriculture census in 1919. The motor truck total is now 17,000 or nearly double the farm truck registration of Pennsylvania in 1919.

## 23 Years Ago This Week In MOTOR AGE

(From MOTOR AGE of Dec. 21, 1909.)

### The Beginning of the Packard

Two years ago Ward Packard of Warren, Ohio, purchased a Winton vehicle. After operating it 12 months he commenced work on a vehicle of his own and spent another year in experiment. He is now using his own carriage and is so well satisfied of its merit that work has been commenced on fifteen for the market. Mr. Packard is a believer in plenty of material, evidently, for it appears that his vehicle is heavier and his motor more powerful than most of those so far produced. He claims, as a result, ability to travel at a good speed over any of the roads within 150 miles of Warren, and that they are among the poorest is common knowledge.

### Early Speed Limits

WASHINGTON, D. C., Dec. 16—In view of the increasing use of automobiles in this city, the District commissioners have deemed it wise to place them in the same category with bicycles, so far as speed limitations are concerned. An order to this effect has been issued and hereafter the speed of these vehicles will be restricted to 12 miles an hour within the city limits and 15 miles an hour outside the city limits.

### International Cup

NEW YORK, Dec. 17—The Automobile Club of America will hold a meeting this week to decide upon the question of representation in the International Cup Race to be held in France next year. Alexander Winton has declared his willingness to enter the contest and to post the necessary \$600 forfeit, and from the present outlook there will be at least one other maker who will enter.

# MOTOR AGE'S PICTURE PAGES



*An Austrian nobleman, Franz Van Schlechtleitner, of Innsbruck, unable to make a living in his own country, has started on a tour of Europe in this candy-store auto-truck. It is designed after a picturesque Tyrolean house, has a porch, sleeping rooms, parlor and kitchen. The gentleman and his wife, at a minute's notice, can convert their home into a candy shop which will stop on signal to sell home made sweets*



*No one would recognize this inspection car on the Delaware & Hudson Railroad as a Buick automobile, but that is what it is. After being driven several thousand miles, the chassis was refitted as shown here and now carries eight or ten passengers at 40 miles an hour over steel rails*



*Fred A. Schmidt of Milwaukee, who won the tire changing contest recently held at Milwaukee. Schmidt changed a 30x3 1/2 clincher, fabric tire, and inflated same with a hand pump in the short time of three minutes and 31 seconds*



# OF AUTOMOTIVE INTEREST



Conversion of the roof of one of the downtown buildings into an automobile parking station has helped relieve the traffic situation in Seattle. The novel parking station is on the roof of the low building at Fifth Avenue and University Street, in the heart of the business district. A special runway to the roof has been built. The parking space is sufficient for more than a hundred cars



Baroness D'Avanzo, noted woman race driver, is said to contemplate entering the Indianapolis races. The baroness has competed in the races abroad and has made so excellent a record that she proposes to enter the great American speedway classic. She will drive a Bugatti car if she comes to America for the race next May



Above: Andre Boillot, winner of the sixth Florio Cup Race. Boillot drove a Peugeot racing car fitted with a Knight type, four-cylinder engine, over the mountainous 268½-mile course in 7 hours, 9 minutes, 7 seconds, an average of 34.2 miles an hour

Below: Bequet, who took third place in a car similar to the winner, rounding one of 1,600 turns which had to be negotiated on each lap. Besides the many turns, ascent of 3,000 feet from sea-level made this Sicilian course difficult

# MOTOR AGE

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## Car Dealers and Tires

THE suggestion will not down that if the car dealer had looked to his own interests he would now be selling the bulk of the tires. Also it seems that the tire manufacturer has made a mistake by not putting his merchandise into these channels. This is said with no view of disparagement of the successful and ethical tire dealer of today. He has come into the trade as a necessity. He is not appreciated for his real worth because the public in the main has not discriminated between the good and "gyp" dealer.

But to get back to the subject. For a long time the automotive dealer thought it was below his dignity to sell anything except the complete vehicle. He talked only in hundreds of dollars and he rather despised the tire sale, for instance, because it was odd change and only a fractional part of the price of a car.

Recently some dealers who have as many as 1000 cars running in their community have been moved to count up the market that they are missing by not selling all or nearly all of these car owners the tires. A car owner should be a prospect for two and a half tires a year on the average and any dealer who will stop to figure the price of these tires against the cars he has in his community will quickly realize that he has been overlooking the prospect of a large total of annual business.

Guy S. Garber, who is well known as a progressive automobile dealer, has recently added a tire business to his car business. He says that the reputation of his establishment in his community has made it possible for him to sell tires at regular prices without quibbling with the buyers. From the beginning, Mr. Garber's tire department has been a growing and satisfactory business and he is looking forward to future seasons with confidence.

Evidently the tire manufacturer could go farther and do much worse than to place his line with the reputable automotive vehicle merchants of the community.



*You don't farm as much as you know how. You've got to get more business and more profit out of the same number of customers.*—SHERMAN.



## Saving to Buy a Car

THE purchase of an automobile long ago ceased to be a cash transaction so far as the majority of buyers are concerned. The automotive merchant, paying cash to the factory for the vehicles he buys, must, in the great majority of cases, receive immediate payment in full for the cars he sells, but a specially developed method of retail financing takes care of that, and as a result something like 65 to 70 per cent of the sales are now made on the time payment plan.

This financing plan usually requires the purchaser to make a first payment of approximately 40 per cent of the price of the car he buys, whereupon the finance company advances to the dealer the balance of the price and in turn collects in monthly installments from the purchaser. There is no longer any doubt that this system has greatly facilitated sales and enabled the ownership of a car by many families who enjoy substantial incomes but who might never have afforded a car if they had been compelled to first save the full price.

To meet this situation a step forward has recently been taken by a financing company to enable the prospective purchaser of a car to save the required amount to make the first payment and obtain possession of the vehicle. The plan is simple, and the dealer is depended upon to sell it along with the car. For example: The salesman calls on a salaried man he believes should be able to own a car of a certain price. The prospective customer agrees that he would like to have the car and, of course, the members of his family have been demanding one. But he just can't see his way clear to buy. It takes everything he makes to pay living costs because he lives up to his income.

"Easiest thing in the world," says the salesman.

It's just like opening a Christmas savings account. The would-be owner makes an initial payment equal to one-fifteenth of the price of the car and signs a contract to buy. His payment is deposited with the finance company and every month thereafter, as agreed, he makes a like deposit which the finance company enters in his passbook until, at the end of six months, his balance is equal to the 40 per cent required to make the down payment on the car.

The money is paid to the dealer, papers signed, and the car delivered, and the customer is credited with six per cent interest on his deposits with the finance company. The balance of the purchase price he may pay over a period as long as six months, as customary in deferred payment sales.



## The Holiday Season

IT is customary, at this time of the year, to wish all of our readers a Merry Christmas and a Happy New Year. In extending these good wishes this year, we are going just a bit beyond the formality of printing such an editorial and discuss briefly why the automotive dealer should have a pleasant holiday season.

During this year of unexampled production and sales of automotive vehicles, the manufacturers have been searching more intelligently than ever before for dealers who could and would rapidly retail their cars.

During this year several movements have taken place for the betterment of the dealers' biggest and most troublesome child—the maintenance department. The advance of the "selling by the job" technique and idea means much to the maintenance department. The advance of the local association movement means much for the future. The fact that the educators are asking the industry how their courses should be shaped so that the schools can produce the kind of material needed for the shops is another long step.

The very general recognition that the maintenance salesman is the most important individual connected with the shop means that maintenance—instead of being on the defensive—will soon be an aggressive factor in the industry and is another step forward.

Accessories are another poinsettia in this Christmas bouquet. Many more dealers are realizing that the sale of a car is chiefly the opening of a trade that should bring in an annual profit to the dealer for several years. That if he seeks to have

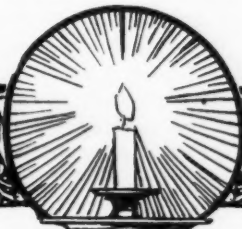
this owner get full service from the car during its life, he should sell him the maintenance parts, accessories, tires and whatever else the owner will need. In doing this, the dealer will make for happier and better owners and will also be building up a business that will be a credit to himself and his family in years to come and, like other successful mercantile businesses, will form an estate to be proud of.

And the suggestion of Christmas brings home a lesson that has seemed to gain a substantial foothold this year. This is that Christmas should be, to a much larger extent than it is, an automotive buying peak. What is more natural than an automobile for the family Christmas present? This has been urged slightly in the past, and to a much greater extent this year. The effort to market automotive accessories as Christmas presents is practically a new thing this year. We predict that, with this year's experience, the movement will get well under way another year.

This fact in itself is a wonderful Christmas gift to the dealer industry.

After reviewing these incidents and looking over the lay of the land, we have no hesitancy in wishing to all of you a Merry Christmas and a Happy New Year with confidence that you will have them. Seldom has the retrospect been more pleasant and the future more rosy. Every thing looks great for another year and all that remains is for every dealer to resolve that he will grasp the opportunity and not sit back and wait for the good things to be shoved onto him.

The blessings of the season be with you.



# Active Selling in Sight for January

## Optimistic Reports From 30 Trade Bodies to N.A.C.C.

### Directors Discuss Taxes and Declare Industry is Ready to Maintain Roads But Not Build Them

NEW YORK, Dec. 16—Realizing that the 43 state legislatures which meet early in 1923 will take up the matter of imposing a tax on gasoline consumption, directors of the National Automobile Chamber of Commerce in their monthly meeting here went into the subject most thoroughly. Most of the session was given over to the discussion.

After all the pros and cons had been considered, the general sentiment of the directors was that they were not in opposition to taxation on motor vehicles either through registration fees, gasoline taxes or both to an amount sufficient to cover the maintenance of roads, not their construction. It further was felt that as the whole public benefits by the highways, the construction cost should be paid by the public which includes motor car owners as well as non owners. All taxes on motor vehicles, declared the directors, should not only be used for maintenance but should be under centralized control. In a nutshell, the views of the N. A. C. C. directors follow along the same lines as the New Jersey plan, which declares that the public shall build the roads and the motor vehicles pay for the upkeep.

Production reports read to the directors showed the total output for 11 months of 1922 to be 2,344,000, with November contributing 232,000, which is within 5 per cent of October and twice the volume of the same month last year. The prevalence of low priced models of closed cars is one of the main reasons for this unusual autumn business, say the manufacturers.

The directors also received reports from 30 trade associations which state that December business will be moderate but that on the first of the year the market will be active again. November sales were reported to be 75 per cent better than for the same month last year and 25 per cent less than October, 1922.

Analyzing the truck field, these reports stated that, looking ahead for the next quarter, light truck business will be fair and heavy trucks poor. The November sales of trucks were about the same as October, 1922, and better than November, 1921. Sales are better in the middle west and far west.

The board also was told that Babson predicts 10 to 25 per cent increase in passenger car and truck business for 1923 as compared with 1922.

The show date question came up for a short discussion, following the suggestion that national shows held late in the

fall might be of greater benefit to the industry, especially dealers, than the winter exhibitions. No action was taken, the matter being laid over for a later meeting.

## 252 Dealers Paid \$169,674 Too Much for 2445 Used Cars

ST. LOUIS, Dec. 18—The National Automobile Dealers' Association is now making a survey of the used car situation in Pennsylvania. Of 3100 dealers addressed, complete replies have been received from 252 who reported 2445 used cars on hand Dec. 1, which were acquired at a cost of \$1,014,322. The present actual market value of these cars, the dealers estimate to be \$844,648, or a flat loss of \$169,674. It is figured that by the time there is added to this figure the cost of conditioning the cars for resale, the selling cost and the legitimate items of overhead expense, another \$160,000 loss will be suffered. Forty-two dealers reported the actual value of the cars the same as the acquisition cost, 45 reported the acquisition cost lower than the present actual market value, but 165 dealers reported the acquisition cost higher than the present actual market value.

## State Highway Associations Open Office in Washington

WASHINGTON, Dec. 19—In order to better carry on the campaign for better highways throughout the United States, the American Association of State Highways, having to do with state highway matters, will maintain a national office in Washington.

The office here will be supported by state finances and will be devoted primarily to needed legislation, cooperation work between the states and will work for standards of bridge work and will also maintain a testing laboratory for highway material. It is also expected that the association, through its national office, will issue quarterly, a magazine on its activities.

The office will be in charge of W. C. Markham, for more than 25 years identified with the good road movement, and who is now engaged in road work in the Bureau of Public Roads. The office will begin functioning Jan. 1.

## RECEIVER FOR TRUCK COMPANY

SPRINGFIELD, O., Dec. 18—The Kelly-Springfield Motor Truck Co. today passed into the hands of Pearl A. Lewis as receiver. The first act of the receiver was to dispense with the services of a number of the official personnel. The receiver said the plant will be continued in operation and that business prospects are good.

## Chalmers Company Now Is Integral Part of Maxwell

### Manufacture and Merchandising Will Be Continued Under Maxwell Policy

DETROIT, Dec. 19—With the expiration of the time in which objection might be filed to the sale of the Chalmers company to Maxwell Motor Corp., the plant and property have passed to the latter company and are now owned 100 per cent by it. In a statement by President William R. Wilson, he said the Chalmers company will continue operations as in the past and that the sale of Chalmers cars will be continued under that name.

He said further that Chalmers will now have the full benefit of the organization that has made Maxwell successful and that it now has behind it the entire financial resources of the Maxwell interests. Dealers were reported to be enthusiastic over the constructive outlook and the company, he said, is planning largely increased shipping schedules for 1923.

In both the case of Maxwell and Chalmers, the schedules for the new year have been only tentatively fixed and will not be whipped into definite form until just preceding the national shows. Both, however, Wilson said, would show large increases over the present year, which has been one of the best Maxwell has had. Chalmers schedules have been low all year, pending the reorganization.

The Chalmers line would have the same attention that was given Maxwell in development to its present successful status, Mr. Wilson said. Its manufacture will be continued in the Jefferson avenue plant.

The plant will continue to be the six cylinder plant of the company's line, but other manufacturing operations may be centered there as the company's plans develop.

Sales of the Chalmers will be handled in conjunction with Maxwell by dealers in practically all cities except those where it is deemed necessary to maintain separate selling organizations. Two separate contract forms will be maintained and there will be sales directors for each line. Both will work under the direction of A. E. Barker, vice-president in charge of sales of Maxwell.

## KALAMAZOO TRUCK INCREASED

KALAMAZOO, Mich., Dec. 18—The Kalamazoo Motor Corp. has announced an increase in the price of trucks, ranging from \$150 to \$300.



# Vote Is 60-40 for Enclosed Cars

## Finance Company Helps Buyer Save First Payment

### Deposits Made for Six Months as in Savings Bank Plan Enable Delivery of Car

CLEVELAND, O., Dec. 19—An interesting extension of the time payment plan of selling automobiles which enables the prospective purchaser to accumulate a sufficient sum for the down payment has been inaugurated by the Metropolitan Securities Co. of Cleveland.

The down payment usually required on cars sold on time is about 40 per cent of the delivered retail price. The prospective purchaser who does not have enough money to make the payment is enabled by this new plan to save systematically on a basis that will accumulate the down payment in six months. The purchaser arranges with the dealer to buy a car at a certain price and pays a deposit to bind the agreement. He then goes to the financing company and makes an initial payment calculated to be about one-fifteenth of the total price of the car. For example, on a car that retails for \$750 the initial payment to the finance company would be \$50.

The purchaser then gets a book very much like a savings bank pass book in which the initial payment is entered. He agrees to pay \$50 a month until \$300 has been paid and his payments are entered as made in his pass book. He receives 6 per cent interest on these deposits. When the customer's payments total \$300 he signs the necessary papers and receives his car. The balance of \$450 may be paid in monthly installments extending over a period as long as 12 months.

About 300 dealers in this territory already have made use of this plan.

### MINNEAPOLIS' 16TH SHOW

ST. PAUL, Dec. 16—The sixteenth annual automobile show of the Minneapolis Automobile Trade Association set for Feb. 3-10, is to be held in the Overland Building in the St. Paul midway district, where it has been held twice before at intervals. Minneapolis automotive men, known as the Allied Automotive Industries, are engaged in negotiating for a city auditorium fund to erect a building where future shows may be held. Walter R. Wilnot is manager.

### EGYPTIAN STUDENTS IN SCHOOL

DETROIT, Dec. 19—The six Egyptian students who were sent to the United States at the expense of the Egyptian Government to study the automotive industry have been placed in the Michigan State Auto School here to study a year before taking up practical work in

automobile factories. It was stated in an earlier issue of MOTOR AGE that they had been placed immediately in factories.

### MAKES 108 M. P. H. AT MONZA

MILAN, Nov. 22—(By Mail)—Pietro Bordino, driving the French Grand Prix 122 cubic inch Fiat, has established a record of 108¼ miles an hour for one lap of the new track at Monza, near this city. This record, which is officially recognized by the national authorities, is interesting as an indication of the speed obtainable from the new Fiat racing cars under conditions closely approximating those of Indianapolis.

## Electric Lines Try to Discourage Winter Driving

NEW YORK, Dec. 16—Advertising propaganda tending to discourage the use of the automobile in winter is being broadcast by the American Electric Railway Association, with which most of the trolley lines of the country are affiliated. This association has prepared a series of advertisements for use in daily papers which has been sent to its members, with advice that these ads be used. In each of the dozen samples submitted, great stress is pictorially laid on the rigors of winter motoring, including the troubles of starting, cold garages, and cold hands and feet, while on the other hand the comfort to be enjoyed in trolley riding is played up, not overlooking the money alleged to be saved by using trolleys instead of automobiles.

### CHICAGO SALON JAN. 27 TO FEB. 3

NEW YORK, Dec. 15—The Chicago showing of the Automobile Salon, which closed here Dec. 9, will from Jan. 27 to Feb. 3 be at the Drake Hotel. The dates are the same as those of the Chicago National Automobile Show which will be held at the Coliseum. Retail orders placed at the New York salon amounted to a little more than \$800,000.

### SALESROOM SHOW AT SPOKANE

SPOKANE, Wash., Dec. 16—A closed car show was featured at Spokane, Dec. 11 to 16. The show was held in individual salesrooms and dealers conveyed visitors from one salesroom to another. All automobile concerns participating were opened until late in the evening.

### YEAR'S UPKEEP FOR \$25

TORONTO, Ont., Dec. 18—The Toronto factory branch of Gray-Dort Motors, Ltd., has put into effect a guarantee to keep up any Gray-Dort car brought from the branch for one year for the flat price of \$25 with the exception of tires and batteries, and repair due to collisions.

## First Returns Announced of N. A. C. C. Poll of Owners

### Preference of Majority Is Based On Weather Protection and General Comfort

NEW YORK, Dec. 18—The enclosed car has won the election by a considerable margin, defeating its "open" rival by 20 per cent, according to the mail ballot sent out by the National Automobile Chamber of Commerce to 20,000 car owners in ten widely separated states, asking: "When you buy your next car, will it be open or enclosed?"

Returns to date show that 60 per cent of those who replied will buy enclosed cars and 40 per cent open ones, which proves the law of averages according to the present demand and would seem to vindicate those manufacturers and dealers who are putting forth all their efforts to meet the demand for enclosed cars.

Analyzing the ballot, it is found that the reasons for enclosed car preference are closely related, protection from weather being foremost. General comfort, which is another way of stating the same thing, but also indicates cleanliness and easy riding qualities, is another big factor. Economy on the basis of all-year use, is a third factor. Appearance also plays an important part.

### Side Curtains a Factor

Others specifically mentioned that the nuisance of side curtains has converted them to enclosed cars. A small per cent say the enclosed car is better for business purposes. A limited number state they are buying enclosed cars because of their women folk, and the preponderance of the weather, comfort and appearance reasons also indicate that the feminine influence is much stronger than specifically stated.

Advocates of the open car, the 40 per cent, declare poor road conditions are an outstanding reason for continued open car demand. Price, including upkeep, is another factor, while lightness, which is related both to road conditions and upkeep, also is quoted. Safety was mentioned by many who expressed an objection to being closed in case of an accident and by those who feared broken glass. Another large element like the open models because of their being in the open air. Business use is quite a factor, some finding the open car more convenient. Some farmers reported that the open car is more of a utility as it can be readily used for cartage and also can be driven over fields more readily.

Summed up, the "open" preferences are classified as follows: Poor roads, 23 per cent; cost, including upkeep, 16; light weight, 15; safety, 14; more air, 13; business, 10; farm use, 5; touring use, 4; better resale value, 8.

## Jordan Believes 1923 Will Be Best Business Year for Automobile Dealers

Opinion of Manufacturer Is That Automotive Merchants Should Prepare Now for Unprecedented Demand for Cars Next Spring

CLEVELAND, O., Dec. 19—A striking presentation of what he believes is in prospect for the automobile dealer next year was made recently, in a public address, by Edward S. Jordan, president of the Jordan Motor Car Co. The address, in part, follows:

"This is a warning to the motor car merchants of America which if heeded at once will give them an opportunity to do a more profitable business in 1923 than they have ever known before in the history of the industry.



Edward S. Jordan

"Any motor car dealer who does not heed this warning may expect to find himself in the spring of 1923 in a position where he cannot possibly get enough automobiles to take care of more than a small part of the demand.

"The following facts make this prophesy certain to be realized.

"More than two million motor cars will be produced and delivered during the year of 1923.

"The great majority of these will be sold and delivered east of the Mississippi and north of the Ohio.

"There was only a spotted demand from all the rest of the country with the exception of the Pacific coast.

"Cotton reached the highest point since October, 1920, on the New York Exchange the other day. Wheat is rising right along and corn has risen fifty points above the bottom.

"Labor is fully employed and wages are going up.

"This will create a spring demand for second hand cars which will be of such volume that it will be possible to sell every single new car that the industry can produce.

"There are eleven million motor cars in the United States and only a few hundred thousand of them are enclosed cars.

"The capacity of the enclosed body producers of the country is now taxed to the limit, and the demand has just begun.

"If I thought that every dealer in the United States would immediately heed this warning and start to order cars for

late winter and spring delivery, then the condition would be partly relieved.

"Because I know that the majority of the dealers of the country are going to wait until the first day of February to start to stock for spring delivery, I know that this condition will be even more acute than anyone imagines.

"The successful manufacturers in the automobile industry are those who get volume production during the winter and deliver cars to the dealers before the first warm day of spring.

"The manufacturers and dealers who fail in the business are those who lack sufficient capital and sufficient foresight to provide merchandise before the day that the customer comes in asking for delivery.

"Why are there not more enclosed bodies available?

"Everyone asks that question. Here is the answer:

"For years the enclosed car demand in the country was limited to a few hundred cars a year. People did not want to pay the high prices that had to be charged for the smaller quantity production of enclosed cars.

"This created a condition which left the volume production to one or two manufacturers. The smaller body manufacturers through the country were working on a custom basis. They were not organized for production. Their men were not trained to get out bodies on an economical basis.

"Now every body maker in the country is reorganizing his business to produce cars on a quality and quantity basis at a lower price.

"The public wants them and the public demands will not be satisfied for 12 months to come.

"There will be another new development in the business during 1923 which is now not generally appreciated.

"Thousands of people who hitherto have thought it necessary to buy new cars will buy high grade second hand cars.

"The public is learning that there are certain makes of cars which after they have been used for a few thousand miles and discarded by the owner are really in as good or better condition than when they were new.

"Thousands of people will relieve dealers who sell cars of high second hand valuation, of their surplus stock and make possible the increased sale of new automobiles."

### TIRE PRODUCTION INCREASES

NEW YORK, Dec. 15—October showed an increase in production of casings, tubes and tires over the previous month and a marked gain over October of last

year, according to the figures compiled by the Rubber Association of America, Inc. for the Department of Commerce. An increase is also noted in inventories and shipments.

## Gray to Exhibit Complete Line at National Shows

Four Door Sedan is Added—Coach Price Increased—Coupe Now in Production

DETROIT Dec. 16—Gray Motor Corp. will show a new four door sedan at the New York and Chicago national shows for the first time anywhere, and in addition, the national shows will see for the first time the complete Gray line of roadster, touring, coupe and coach. The price of the coach has been increased from \$760 to \$785. The coupe, which is now being shipped, is \$715.

H. W. Burritt, formerly special tax counsel for all Ford Motor Co. interests, has been made secretary and assistant treasurer of Gray, being directly associated with President F. L. Klingensmith. Burritt was with Ford Motor Co. in several capacities for a number of years, first being special investigator in the sociological department, then in the legal department, office manager, and finally special tax expert. With Gray, he succeeds J. B. Moran, resigned.

L. R. Martell, formerly production manager at Gray, has been made commercial manager, working in the sales department with D. Henry Bonner, sales manager. The advertising and service departments have also been brought under the direction of the sales department. Shipments to Canada for distribution through the sales organization of the Gray-Dort company are now going forward in considerable quantity.

The following new distributors have been added by Gray: R. E. Jordan, Dallas; Montana-Haynes Motor Sales Co., Butte; M. L. Graham Co., Salt Lake City; Taylor A. Faulder, Sydney, Ohio, and C. J. McKinney Co., Laredo, Texas.

### REPUBLIC PRESIDENT RESIGNS

DETROIT, Dec. 16—Following the resignation of Col. F. E. Smith as president of the Republic Motor Truck Co., it is announced that no action will be taken by the directors on the election of a successor pending developments of the receivership under which the company is now operating. Only one or two of the former officials are being retained by the receiver. It is expected that the company will be either closed out or sold at a receiver's sale in less than two months.

### QUINCY PLAN SELLS CARS

QUINCY, Ill., Dec. 15—Under supervision of a competent manager, the Quincy Automobile Exchange, established by the Quincy Automobile Trades Association, has sold 73 used cars in the last 60 days. It is a record never before equalled in this section of the country and has strengthened the financial condition of the Exchange which after two years is now operating upon a profit basis.



## Hoover Says U. S. Will Save Motorists \$100,000,000 a Year

### Predicts Engine Tests of Bureau of Standards Will Decrease Gasoline Consumption

WASHINGTON, Dec. 19—A saving of approximately \$100,000,000 a year to the automobile industry is predicted by Secretary Hoover of the U. S. Department of Commerce, in his annual report, as a result of tests now being made in the U. S. Bureau of Standards.

This saving, the secretary states, will be made in the annual gasoline bill of 10,500,000 motorists, being approximately \$9 per automobile and will be secured by increasing the efficiency of the internal-combustion engine. A complete study of automobile engine performances, both in the Bureau of Standards' laboratory and in automobiles on the road, is being carried out with the object of increasing the efficiency of internal-combustion engines, the report states.

"The Bureau, through this work, it is believed, can assist in lowering the gasoline consumption of automobiles ten per cent for a given mileage, and it will represent a saving to the country of something like \$100,000,000 per year," says the report.

### ACCESSORY COMPANY CITED

WASHINGTON, Dec. 19—The McCord Mfg. Co., Inc., of New York City has been cited by the Federal Trade Commission for unfair competition in the sale of automobile accessories. It is charged that the company, which is a manufacturer of motor gaskets, manifolds, and other automobile parts, requires its agents and dealers to sell at certain specified standard prices.

The complaint carries the further allegation that the McCord company favors distributors who maintain resale prices, by discriminating in prices against competing distributors who do not maintain such prices. The company is given until Jan. 15 to show cause for dismissal or stand trial.

### THREE-CENT GAS TAX PROPOSED

COLUMBUS, O., Dec. 16—Director of Highways Herrick, addressing the Ohio Tax Association, advocated a gasoline tax of three cents a gallon, which he estimated would yield \$6,000,000 a year, for road reconstruction purposes. Establishment of three separate state highway funds was recommended by Herrick: Construction, maintenance and reconstruction.

Two of these exist now; namely, the construction fund, raised by direct one-half mill levy, and the maintenance fund, obtained from automobile license fees. The former amounts to \$5,000,000 a year and the state's share of the latter, \$3,500,000.

### BUYS BATAVIA TIRE PLANT

BUFFALO, N. Y., Dec. 16—William N. Freeman, until recently executive manager of the Madison Tire & Rubber Co. of Buffalo, signed contracts for the purchase of the Batavia Rubber Plant, in Batavia.

The plant was recently placed in the hands of receivers, from whom Freeman brought it. He will immediately start production at the plant which has been closed for a week, making tires and tubes. The plant has a capacity of 1,000 tires a day. Freeman expects to increase this output to 1,500 a day.

## Reduced Rate For Annual N.A.D.A. Convention

ST. LOUIS, Dec. 19—The National Automobile Dealers' Association announces that the railroads have granted a round trip rate of one fare and a half for the sixth annual convention of the association which will be held in Chicago, Jan. 27 to 30. The rate is for members only and may be utilized only upon presentation of a membership certificate which will be issued upon request by the general manager of the association.

### SEVERAL NEW COMPANIES

PITTSBURGH, Pa., Dec. 16—New automobile companies organized here, all of which will be incorporated, follow:

Englert-McKean Automobile Co., by Milton S. Englert, Edgar D. McKean and Frank W. McKean.

Oakland Auto Supply Co., Inc., by Walter P. Held, W. B. Mathews, Jr., and J. Edwin Woll, Jr.

McGuire Band & Lining Mfg. Co., to manufacture auto bands and linings and tools, by William A. McGuire, R. G. Reid and W. H. Reisher.

Baker Motor Co., by E. R. Baker, C. B. McAlister and David C. McAlister.

Champion Motor Co., by E. N. Beebe, J. A. Moran and J. A. Bornmann.

Star Auto Service Co., by Alex Madjaric, Joseph Rock, Robert Jakravsky and A. Fine, to manufacture curtains and tops.

Pittsburgh Auto Exchange Co., by A. F. Haberl, Jr., Louis M. Bennett and Sol Bennett.

### N. A. C. C. TRUCK MEN TO MEET

NEW YORK, Dec. 18—The motor truck committee of the National Automobile Chamber of Commerce at its meeting here decided to hold a special meeting for truck members of the Chamber during the New York show. Thursday, Jan. 11, was settled upon. The meeting will be held at N. A. C. C. headquarters and the entire day given over to discussion of questions of vital importance to truck makers.

### 140 DEALERS MEET

PITTSBURGH, Pa., Dec. 16—The Oldsmobile Pittsburgh Co. held its third annual convention last week. Service convention was conducted by R. M. Hatfield, general service manager of the Oldsmobile Pittsburgh Co. The attendance was 140.

## Dealers' Insurance Rates Forced Down 20 Per Cent

### N. A. D. A. Bulletin Shows How Association's Service to Members Brought Reduction

ST. LOUIS, Dec. 19—A bulletin issued by the National Automobile Dealers' Association makes the following statement:

"After six months of the competition to which casualty insurance companies of the United States have been subjected by the Insurance Service Department of the National Automobile Dealers' Association, the insurance companies have revised the manual rates applying to automobile dealers and garages to a point virtually 20 per cent lower than the existing rates at the time the N. A. D. A. began its struggle for lower rates for the industry. The rates are still 25 to 30 per cent higher than the rate available for members of the National Association, through their organization.

"To show just what has been done in actual figures by the revision of the manual, the rates applying in the cities of New York, St. Louis and Chicago are compared by C. A. Vane, general manager of the N. A. D. A., in a statement commenting upon the association's victory for the principle for which it contended.

"In St. Louis and Chicago on a public liability policy of \$5,000-\$10,000 limits and property damage of \$1000, the rates for automobile dealers were:

"For first \$10,000 payroll—Public liability, \$2.50 per \$100; property damage, \$0.95 per \$100.

"Next \$15,000 payroll—Public liability, \$1.90 per \$100 property damage, \$0.70 per \$100.

"By this rate a dealer whose payroll was \$25,000 a year would be paying \$735 for public liability insurance of \$5,000-\$10,000 limits with \$1000 property damage. This makes an average rate of \$2.94 per \$100 of payroll. Since the revision the casualty companies have abolished the division of first \$10,000 and next \$15,000 and have authorized a flat charge of \$2.55 a hundred.

"The New York rates have been reduced from an average of \$4.40 per \$100 of payroll to \$4.00 per \$100 of payroll on the basis of a payroll of \$25,000 a year. These distinctions and revisions have been made effective throughout the entire United States in about the same degree of reduction."

### 3 COMPANIES RAISE TIRES

NEW YORK, Dec. 18—Following the lead of the Kelly-Springfield company in increasing tire prices 10 per cent the Fisk company announced increases ranging from 10 to 12 per cent and the Howe Rubber Co. announced a 10 per cent increase.

## Another Production Record May Be Made in December

**Plants Keeping to Schedules That  
Are Very Good for  
Season**

NEW YORK, Dec. 18—Another record in the production history of the automotive industry doubtless will be made in December, notwithstanding the unusually well sustained operations during the previous months of the year. Production is moving along toward the inventory taking period on relatively high programs with major automobile plants keeping to schedules that are remarkably good for this season.

November proved to be one of the surprises of the year, with 232,000 cars and trucks produced. This was only 6000 less than the October output, but 26,000 more than the total for September, the previous short month. Production for the eleven months approximate 2,345,000 and prospects are that for the full year it will aggregate 2,550,000.

There are no perceptible signs that dealers are stocking cars. The fact that a general shortage of closed models continues has led to a somewhat stronger demand for open types, fitted to meet the rigors of winter. The popularity of the closed car, however, shows no abatement and is responsible for the increased

percentage of this type in practically all production schedules that have been announced for next year. To eliminate much of the trouble that has been experienced in obtaining bodies, a marked expansion of body producing facilities is taking place, the effect of which will be felt in next year's car output.

## 100 Members in New York Tire Dealers' Association

NEW YORK, Dec. 16—The New York Tire Dealers' Association has more than 100 members and has brought about mutual confidence among them which has worked for the good of the business, according to the statement of George J. Burger, the president, at a banquet of the association this week. Burger has also recently been elected president of the National Tire Dealers' Association.

Burger told his fellow dealers that if they would sell their merchandise on its merits they would not have to contend with the demands of the public for discounts from list prices. He said the public wants to buy good tires from reputable dealers and will do so if dealers will show by one-price merchandising methods that they are reputable merchants.

George F. Shugart, vice-president of the United States Tire Co., and Fred Teale of the Brunswick, were among the manufacturers to make brief addresses.

## Regrinders' Association Formed at Indianapolis

**Central Body Organized to Work  
for Standardization and  
Education**

INDIANAPOLIS, Dec. 16—The Central Cylinder Regrinders' Association was formed here this week in a meeting at which about 25 of the 60 cylinder regrinders of the state met. The aims of the new organization are to bring about higher standards and some sort of standardization in methods and an educational campaign to be evolved which will tell the motorists the true cylinder regrounding situation. A second meeting is to be held in February, when it is hoped to get more of this craft in the organized work.

T. A. Meyer of Indianapolis was elected president, with W. W. Adams, Ft. Wayne, vice-president; J. T. Andrews, Indianapolis, secretary; Geo. W. Kemp, Muncie, treasurer.

Several committees were appointed to report at the next meeting, to be held here Feb. 21. The heads of these committees were C. W. Yount, Indianapolis, membership; G. B. Fields, Terre Haute, advertising and sales; F. F. Cartwright, Indianapolis, dues and finance, and Geo. W. Kemp, standards, adjustments and education.

## This Window Says Merry Christmas and Happy New Year to Everybody



This photograph shows how one automobile dealer contributed to the Christmas spirit of his community and attracted widespread attention to his business by a window display in which there was no direct suggestion of the vehicles he has for sale. The display is that of W. F. Whitney, Ford and Lincoln dealer at 5354 West Chicago Avenue, Chicago, Ill. The scene is a beautifully furnished living room, 30 by 15 feet, in which there is a brick fireplace, Christmas tree, floor lamps, rugs, pictures and other furnishings and decorations to make it fully suggestive of Christmas in the home. The furnishings, all of the highest class, were loaned

by merchants in the neighborhood who are given credit on a neatly lettered card at one side. A hand lettered panel, placed where all who stop to look may see it, carries this Christmas message: "Our Christmas Thought: That the children may be made a little happier and that the old smile on Mother's and Father's face may be a little broader. Merry Christmas, Happy New Year, Everybody!" On one side of this display is a window in which automobile accessories are shown with Christmas decorations and on the other side is a window in which a Ford sedan appears to be breaking forth from a Christmas package.



## Prices of Iowa Used Cars Reach Lowest Mark in History

### S. P. Whiting Issues Result of Investigation of Six Makes of Cars

DES MOINES, Ia., Dec. 15—According to a study just completed by S. P. Whiting, secretary of the Motor Trades Bureau of the Des Moines Chamber of Commerce, prices of used cars in November reached the lowest mark in the history of Iowa motor markets.

Whiting bases his conclusion on a survey of the weekly sheets covering used car transaction of the Des Moines motor dealers, supplemented by special reports from the leading dealers of central Iowa. Six representative makes were used in making the investigation.

The survey reveals that lower prices of new cars is one of the principle reasons for the drop in used car prices. It also shows that every decline in new car prices has been accompanied by an even sharper cut in used cars. Another reason given for the new low mark by Whiting is that the present methods of financing purchase of new cars by manufacturers and motor-financing companies has worked to a decided advantage of the new cars, as it gives purchaser a plan for buying a car with a down payment no larger than the price of a used car.

### MANY NEW DORT DEALERS

FLINT, Mich., Dec. 18—Among the dealers to whom the Dort Motor Car Co. has recently granted franchises are the following:

Hartman Motor Sales Co., Ashtabula, O.; Geiseke Auto Co., New Ulm, Minn.; St. Termath, Leseuer, Minn.; Humboldt Auto Exchange, 3217 W. North avenue, Chicago, Ill.; Quincy Motor Car Co., Quincy, Ill.; East Hartford Garage, East Hartford, Conn.; Thompson's Garage, Southington, Conn.; H. Dandois, Brussels, Wis.; Nevins Auto Co., Haverhill and Marshfield Hills, Mass.; F. S. Clanner, Fall River, Mass.; M. C. Thomas, Cambria, Minn.; Buchanan Bros., St. Maries, Ida.; E. St. George, Rochester, Minn.; Borchert Auto Co., Amboy, Minn.; Armbrister Bros., Portsmouth, O.; O. Loughlin, Leseuer Center, Minn.; T. C. Kern, Stillwater, Minn.; Yeagly & Hershey, Palmyra, Pa.; J. H. King, Portageville, Mo.; Cosler Auto Sales Co., Springfield, O.; Hoffman Motor Sales Co., Sandusky, O.

### MINNESOTA QUESTIONNAIRE

MINNEAPOLIS, Dec. 16—Minnesota has just closed a questionnaire investigation of tourist travel to learn various things about the 500,000 people who left \$25,000,000 in the state in 1922. More than half the number expect to come again, many of them to invest as some already have by buying of property. The majority of tourists came by motor car, many camping part or all of the time, the average stop being three weeks. Larger expenditures than in the last three years are to be made by hotel and

resort keepers to entertain the visitors. Most of the inquiries about the state came from Iowa. Foreign cars totaled 168,120, and carried 672,480 persons figuring the average of four to a car.

## Free Parking Plan Aids Winter Use of Cars

DAVENPORT, Ia., Dec. 18—Winter use of automobiles by persons outside of Davenport but within the city's trading radius is encouraged by a plan devised by the Retail Merchants' Council of the Chamber of Commerce to provide for the parking of their cars in heated garages, the expense to be borne by the merchants. This plan is expected to greatly stimulate winter business for the garage owners. The retail stores affiliated with the Chamber of Commerce give tickets which are accepted in payment for car parking in any one of a number of designated garages.

### WIN 3-CORNERED CONTEST

PORTLAND, Me., Dec. 11—To celebrate the victory of the Portland retail salesmen for the Sills-Chevrolet Co. of New England, W. C. Sills, president of the company, gave a banquet here to the entire local organization. There was a three-cornered contest held between the Boston, Providence and Portland sales departments lasting for three months. There were individual prizes awarded for those who made high scores as follows: E. C. Steadman, Boston store, first prize, gold watch; I. M. Choate, Portland, second prize, traveling bag with kit; G. H. Hayden, Boston, third prize, gold cuff links. A party of 20 from the Providence and Boston salesrooms came to Portland to participate in the banquet.

### HOUSTON TO REDUCE ACCIDENTS

HOUSTON, Tex., Dec. 15—The Houston Auto Trades Association has started a move to reduce the number of accidents and collisions in and about the city. The association is urging the passage of an ordinance requiring the licensing of every person who drives an automobile. This would prohibit the driving of cars by children. The association wants every driver of an automobile or truck in Houston to stand an examination which would show a certain amount of judgment could be used by the driver in emergencies before a license is issued.

### RESTRAINING ORDER ISSUED

WILMINGTON, Del., Dec. 16—The United States District Court has issued a temporary injunction restraining the General Motors Corp. from manufacturing devices alleged to infringe on certain patented super-internal combustion engines and super-heated manifolds held by the Deppe Motor Corp. of New York.

## Canadian Garagemen Urge License Law for Mechanics

### Delegation Makes Suggestion Before Motor Committee of Ontario Legislature

TORONTO, Ont., Dec. 18—A delegation of garagemen appeared before the Motor Vehicle Committee of the Ontario Legislature last week and asked for legislation requiring that all automobile mechanics should pass an examination on the same principle as stationary engineers, and that every first class garage be forced to employ 20 per cent first class men, 40 per cent second class, and the remainder unskilled, if necessary.

One of the members of the delegation said: "A large proportion of the accidents we have today are due to improper materials being put in automobiles by incompetent mechanics."

F. C. Biggs, minister of public works, and chairman of the committee, asked what percentage of the mechanics at present employed in the garages of the province could pass the suggested examination.

"About forty per cent," was the reply.

The committee promised consideration of the request.

### STANDARD PLANTS TO BE SOLD

CLEVELAND, Dec. 18—The plants of the Standard Parts Co., probably will be sold on Feb. 20. Receiver F. A. Scott has made application to sell and the court will, on Jan. 6, pass on the request. Receiver Scott suggests that the Eaton Axle Co. plant and Standard Welding and Perfection Spring plants be sold as units. He also explains it may be well to sell the Perfection spring plant, the Pontiac spring plant and the Cleveland, New York and Boston service stations.

### KING RECEIVERSHIP ENDED

DETROIT, Dec. 16—Receivership of the King Motor Car Co., ordered in 1920 as a result of a voluntary bankruptcy declaration, was dissolved this week in Circuit Court here. The court allowed \$25,000 receiver and \$2000 attorney fees.

The bankruptcy petition as filed set up liabilities of \$1,385,223.44. C. A. Finnegan of Buffalo purchased the plant for \$500,000, and claims for \$1,000,000, shortly after the receivership.

### MOVE TO CHANGE RACE DATE

INDIANAPOLIS, Dec. 15—The American Legion, Veterans of Foreign Wars, and the Indianapolis Chamber of Commerce are said to be backing a move to introduce legislation in the forthcoming sessions of the legislature that would change the date of the 500-mile Indianapolis Motor Speedway Race to some other than Memorial Day. Similar action has been attempted before, but this is the first time so well organized a movement has been under way.

## Discuss Chicago Traffic At Association of Commerce Meet

Partial Solution of Problem Is Offered by Maj. Kelker, City Traffic Expert

CHICAGO, Dec. 18—Approximately 37,000 motor vehicles are parked constantly in the day time in the loop district of Chicago, according to Maj. R. F. Kelker, city traffic expert, who spoke this week at a meeting of traffic experts and business men called by the Chicago Association of Commerce to consider means of relieving traffic congestion.

"There is space along the loop curbs for 37,000 parked cars," Maj. Kelker said, and that space is filled all the time. Clear these streets and you will solve the greatest part of the problem."

He declared that Chicago's traffic is unlike any other and that methods used successfully elsewhere would not work here. He declared one-way streets would be of no advantage as long as street cars operate through the loop as they do now. It was also his opinion that automatic signals would be impractical in the loop.

City ordinances and police regulations limit parking in the loop, the time on most streets being 30 minutes and parking being prohibited altogether on certain streets during the rush hours. The complaint was voiced by a number of business men that parking regulations are not impartially enforced, but that by means of tips and bribes to policemen preferred persons are able to monopolize parking space. The meeting appointed a committee composed of representatives of various organizations to study this city's traffic problem, which is considered one of the most serious in the United States.

Another expert who voiced his opinion of this city's traffic was Richard E. Enright, police commissioner of New York City, who addressed the Illinois Manufacturers' Association here. He advocated removal of the elevated railways and the building of a subway as the best forward step. It was his opinion that by 1925 traffic in Chicago will be double what it was in 1920.

## This Highway Commissioner Favors Exclusive Truck Road

HARTFORD, Conn., Dec. 18—State Highway Commissioner Charles J. Bennett will recommend to the legislature which convenes Jan. 3 the construction of a special highway for the exclusive use of motor trucks, extending from Bridgeport, Conn., to the New York state line, which has been under discussion for some time. The proposed truck route is about 30 miles long and a highway 22 feet wide would require an appropriation of about \$1,500,000. One of the plans suggested to meet the expense of maintaining this route is a tax of two cents a ton-mile, which would bring in a

revenue of about \$280,000 annually, it being estimated that 14,000,000 ton-miles of pay freight annually pass over the Boston Post road to the New York state line.

## Would Bar Cars From Boston's Business Center

BOSTON, Dec. 9—The Boston Chamber of Commerce and several representatives of various bodies met here to discuss traffic and highways, and one of the ideas advanced was that the time was coming when passenger cars would be barred from the business section of Boston during certain hours every day, Sundays excluded. It was suggested that a metropolitan planning board be formed to map out traffic arteries. That did not meet with much approval because it would interfere with the State Highway Commission, and the Metropolitan Park Commission in the mapping of routes. Strangely enough about every type of organization was represented except the automobile industry.

## WANAMAKER AIDED HENRY FORD

NEW YORK, Dec. 18—The death of John Wanamaker marked the passing of a man whose vision was so broad that he foresaw the possibilities of the motor vehicle in the earliest days of the automobile industry. More than 20 years ago when Henry Ford was struggling for a foothold John Wanamaker reached out a helping hand to the Detroit manufacturer and placed the Ford agency in his New York store, this being the first eastern representation Ford ever had. It also is said that the late merchant prince assisted Ford financially at a time when the world looked darkest. W. D. Gash ran the Ford business for Wanamaker until about 1903 when the Ford company itself took over the representation.

John Wanamaker also figured prominently in the Selden patent suit, being one of three brought into litigation, the others being the Ford Motor Co. and the O. J. Gude Co. The suit against Wanamaker was filed Jan. 21, 1904, and later the three suits were merged into one defense.

## PROPOSES NEW TRACTOR PLANT

ANDERSON, S. C., Dec. 18—W. S. Anderson of Los Angeles, Cal., has come here and is making plans to open a tractor factory, to be known as the Anderson Tractor Co. A complete factory, making all the parts here, is being planned, but while it is being built and equipped the parts will be manufactured elsewhere and the machines assembled here. It is planned to build tractors of three types and to equip them with sprays for spraying crops.

## Decline In Low Priced Car Sales Reported In New York

However, Business Increases In the Higher Priced Car Field

NEW YORK, Dec. 16—Registration of new cars in the Metropolitan territory showed a decline in the low and medium priced models in November as compared with the previous month but an increase in the number of higher priced types, according to the Automobile Sales Analysis compiled by Sherlock & Arnold.

Five cars lead the low and medium priced field with four others some distance behind and the rest falling below the 100 mark in point of sales during the month. There are now 10 cars which show sales in excess of 1,000 during the eleven months of the year.

In the higher priced field, two lead in November with sales exceeding 100. Two makes have been sold in excess of 1,000 during the 11 months, one showing a considerable advance over the others.

The 11 months of 1922, with a total of 62,957 low and medium priced cars and 7,013 higher priced, show a considerable advance over the same period in 1921 when the totals respectively were 41,732 and 4,359. November more than doubled the sales of the same month a year ago in higher priced lines and showed an increase of 2,000 in low and medium priced car sales.

A recapitulation of sales follows:

	Medium and Low Price High Price	
January .....	2,014	283
February .....	2,230	273
March .....	6,352	632
April .....	8,428	862
May .....	8,467	961
June .....	8,203	865
July .....	7,816	678
August .....	5,921	516
September .....	4,592	511
October .....	4,518	665
November .....	4,416	767
Total .....	62,957	7,013

## November Output of 232,000 Brings Total to 2,345,120

NEW YORK, Dec. 1—Shipping returns received by the National Automobile Chamber of Commerce place November production at 232,000 motor vehicles, a surprising total considering the time of year. This is the eighth consecutive month that production has topped 200,000. Total output for the 11 months of the year is approximately 2,345,120. The output by months this year follows:

January .....	91,109
February .....	122,366
March .....	172,720
April .....	219,558
May .....	256,219
June .....	289,011
July .....	245,414
August .....	273,425
September .....	205,784
October .....	238,514
November .....	232,000



# Indiana Dealers Favor Tax for Roads

## Convention Opposes Using Levies for Other Purposes

### Legislation Proposed to Increase License Fees and Impose Gasoline Tax

INDIANAPOLIS, Dec. 16—"Millions for roads but not one cent for tribute" is the answer of the second annual convention of the Indiana Automotive Trade convention held here this week to consider the threatened legislative action and propaganda for added motor vehicle license fees and a gasoline tax, part of which extra millions some politicians propose to divert to other than road work, along with abolishment of a general state road tax.

The convention went on record that no motor vehicle funds or taxes should be diverted to other than road work; and that if added license fees and taxes are ordered, all the resulting funds be spent on Federal aid roads so that the state may take up the overdue balance of \$6,000,000 of Federal aid allotment not yet earned by the state highway construction work. New fees and the gasoline tax would add five or six millions to road funds, and the convention did not go on record against these if they are devoted to the needed road work.

The approaching legislative session and the automotive and trade bills that are threatened took up much of the time of the convention. Every speaker touched on the topics and pointed out the futility of the trades people expecting to stop unfair legislation unless the trade organizations are large and strong concerns. Better service to all motor

users in the endeavor to get more respect for the industry and trade was another theme that all speakers hit. Part of the cause of the public and politicians taking the industry for an easy mark was due to the lack of organization, or any unified stand taken by automotive people. The public judges the trade by the weak sisters, the slovenly and inefficient service and sales plants and these will persist as long as the dealers as a whole do not insist upon higher standards of merchandising and service on the part of all engaged in the business.

The morning session was given over to official reports, a round table discussion of association details and an address by Charles E. Watkins, director of welfare at the General Motors manufacturing plant at Muncie, Ind. The first talk of the afternoon was given by S. H. Hadden, editor of Municipal and County Engineering, who gave facts and figures of Indiana roads, a comparison of the state with its near-by sisters who have left it at the post in the road building race, and the vital need of the state highway department for more funds which could be raised by increasing the license fees to the uniform motor vehicle rates, and the gasoline tax, both of which would enable the state to meet Federal funds if all the money from these additions were devoted to construction.

L. E. Titus, Olympia, Wash., president of the Washington Automotive Trade Association, gave a glowing account of the achievements of the strong western state organizations of the dealers. The executives of these had been invited to the recent western governors' conference to give opinions relative to proposed gasoline tax, and state police and other automotive control plans of the western group of states.

"When legislative threats are made," Titus said, "the trade bodies never get on the defensive. They always spring a better plan along the same line. The trade work and the high standard of service have given the trades people a standing, and this with a record for public work of an unselfish character has given the bodies a weight that counts in legislation." He strongly advised more intensive organization work among the dealers of the state and applauded the stand for road progress taken by the convention.

C. A. Vane, general manager of the National Automobile Dealers Association, greeted the convention on behalf of the N. A. D. A., and warned the dealers to cease looking for a national cure for used car disease, since there is none. He advised better merchandising and more dependence on the knowledge of other dealers one gets from organization work and a more individual dependence on hard work, territory analysis and the hard and fast rules of general business law that for every investment of time, money or energy there must be a profit.

J. Cooper Props, Muncie, president; R. V. Law, Indianapolis, treasurer, and D. C. Barnette, secretary, were re-elected, and H. J. Cole, Terre Haute, was made vice-president. The following new directors were elected: J. C. Dorman, Gary; Walter Duckwall, Noblesville; Frank Kelsey, Huntington; C. B. Hayner, Ft. Wayne; D. A. Boswell, South Bend; A. G. Goyert, Greensburg.

The convention ended with an evening banquet with Colin Campbell, general sales manager of the Chevrolet Motor Co., as speaker, and J. Cooper Props toastmaster.

## Cleveland Dealers Hail New Year With Great Optimism

CLEVELAND, Dec. 18—Cleveland dealers have shown by orders for future deliveries that they are going into the new year with a degree of optimism that has never been excelled.

Some time ago it was reported that the local dealers were not stocking cars and that they were reluctant to place orders for delivery in the new year. This has changed, and it is now reported they are buying heavier for March and April deliveries than ever before.

At a meeting of Jordan distributors and dealers here recently orders were taken for 4,500 cars for delivery up to March 1. The Peerless already is sold far into the new year and at a rate that will keep the factory going at top speed. The same is true of Chandler, the Cleveland and Stearns.

## NEW BARLEY DISTRIBUTORS

KALAMAZOO, Mich., Dec. 19—Appointment of A. H. Vayo as distributor for the Barley Motor Car Co., at Omaha, Neb., is announced by William Elliot Phelps, general sales manager of the company. The Pittsburgh-Templar Co., Pittsburgh, Pa., has been appointed distributor for western Pennsylvania and eastern Ohio. New retail agencies have recently been established by the company in 27 towns, among them being Newburgh and New Rochelle, New York; Bridgeport, Conn., Scranton and Germantown, Pa., Camden and Trenton, N. J., and Evanston and Aurora, Ill.

## NO BUICK REDUCTION

FLINT, Mich., Dec. 18—President H. H. Bassett of the Buick Motor Car Co., has made the positive declaration that his company has no intention of reducing prices. As a reason for maintaining the present level he points to the prices of leather and lumber.

## International Harvester Co. Hopes to Maintain Schedule

SPRINGFIELD, O., Dec. 16—Supt. C. H. Smart, of the Springfield works of the International Harvester Co. announces that they hope to maintain their truck schedule of 25 a day throughout the winter. The works has made an enviable record on production for the last year. For several months the schedule called for 50 trucks a day.

## 1923 GREATEST YEAR, SAYS WILLYS

TOLEDO, Dec. 16—"We hope that next year will be the greatest in the history of the Willys-Overland Co." declared John N. Willys, president, before a group of business men here last Monday. "Our inventory has been taken and we are planning to produce 45,000 automobiles in the first quarter. This means we will have 15,000 or 16,000 men employed before April 1."

## Hudson Prices Reduced for the Third Time This Year

**Take \$200 From Sedan Price, \$100 From the Coach and Phaetons and \$100 From Essex Coach**

DETROIT, Dec. 15—For the third time this year Hudson and Essex prices have been reduced, the latest cut coming when the company announced a new list, chopping \$200 off the Hudson sedan and \$100 off the coach and two phaetons. Only one Essex reduction was made, \$100 being taken off the coach.

Hudson started the year with the seven-passenger Hudson listing at \$1745, July 1 this was cut to \$1695, and on Sept. 22 to \$1575. Now it is \$1475. The Essex coach listed at \$1345, \$1295 and \$1245 on these dates and now is \$1145.

The revised list is as follows:

HUDSON		
	Old Price	New Price
4-passenger Phaeton.....	\$1525	\$1425
7-passenger Phaeton.....	1575	1475
Coach .....	1625	1525
Sedan .....	2295	2095
ESSEX		
Coach .....	\$1245	\$1145

A statement by the company on the price reduction said the announcement of a price reduction in quality cars such as Hudson and Essex in the face of a large and sustained winter demand is indicative of the economies of quality automobile production. The new list makes especially noticeable the small differential between the open and closed models which policy has made Hudson and Essex production this year over 60 per cent closed cars.

Announcement of the regular quarterly dividend of 50 cents a share and an additional dividend of 25 cents a share came with the declaration of the Hudson new prices. Both of these are payable Jan. 2.

During the fiscal year ended Nov. 30, the company reports the manufacture of 61,110 cars. Production in 1923 has been fixed at approximately 100,000.

### MERCEDES TO ENTER RACE

PARIS, Dec. 1—(By Mail)—Three Mercedes 122 cubic inch racing cars will start in the next 500-mile race at Indianapolis, according to a statement made by the directors of the Daimler Motoren Gesellschaft, of Stuttgart, Germany. No particulars have been given out regarding the design of the German cars, but it is believed that they will be fitted with eight cylinder engines having steel cylinders with welded on steel water jackets and overhead valves. The drivers will be selected from the firm's regular racing team which comprises Lautenschlager, Salzer, Sella and Werner.

The Benz Automobile Co., of Mannheim, Germany, is hurrying forward work on a 122 inch racing car with the hope of having it ready for the Indianapolis event.

### NO FORD STOCK DIVIDEND

BOSTON, Dec. 18—Henry Ford asserts the Ford Motor Co. will not declare a stock dividend this year. Ford added, however, he believed the present wave of stock dividend declarations by big business corporations a business necessity.

### VerLinden Said to Plan Purchase of a Going Company

DETROIT, Dec. 15—Edward VerLinden, former president of Olds Motor Works, and for a time president of the Durant Motor Co. of Michigan, is said to be prepared to re-enter the manufacturing field with a light six assembled car which will sell below \$1000. The car has been fully developed and production on it will be started soon after the first of the year, it is said, if VerLinden is successful in buying out the business of a company now established.

In his plan to re-enter the business, VerLinden is known to have important financial connections. It is his intention to buy out a going company rather than undertake to build up an entire new dealer organization.

## Ford Sales in U. S. for November Total 106,302

**Dealers Have Less Than Half On Hand as Compared to Last Year**

DETROIT, Dec. 18—Retail sales of Ford cars and trucks in the United States in November totalled 106,372, representing the largest November business the company has ever had. Retail business in November, 1921, approximated 55,000 to 60,000, the present year representing almost a 100 per cent increase.

In connection with the volume of business at the present season, Ford officials declare that it is unprecedented and that in spite of the capacity operation of the plant it is impossible to meet current demands. Dealers have less than half the stock on hand that they had this time last year, despite the major operation of the plant all year, the total production now reaching beyond the 1,300,000 mark.

Although it is planned to greatly increase the production after the first of the year, officials declare it will be impossible to meet the ordinary spring buying.

## Many Events Scheduled for New York and Chicago Show Periods

NEW YORK, Dec. 18—Events taking place during the national show weeks in New York and Chicago are announced as follows:

### NEW YORK

Jan. 6-13—National Automobile Show, Grand Central Palace.  
Jan. 8-13—Automobile Body Builders' Association Show, Twelfth Regiment Armory.  
Jan. 9-12—Society of Automotive Engineers' Annual Meeting.

### January 8

10:00 A.M.—National Automobile Chamber of Commerce Export Manufacturers' Convention.

6:30 P.M.—Rubber Association Dinner, Waldorf-Astoria.

### January 9

2:30 P.M.—National Motor Truck Committee Meeting.  
6:30 P.M.—N. A. C. C. Annual Dinner, Hotel Commodore.

### January 10

10:00 A.M.—N. A. C. C. Directors' Meeting.  
10:00 A.M.—Franklin Automobile Co.'s Sales Conference, Commodore; Luncheon 1:00 P. M.

Evening—Eastern Oldsmobile Dealers' Meeting-Dinner, Commodore.

6:30 P.M.—Motor and Accessory Manufacturers' Association Dinner, Commodore.

### January 11

6:30 P.M.—S. A. E. Dinner, Pennsylvania Hotel.  
Hupmobile Luncheon and Dealers' Meeting, Commodore.  
New York State Automobile Merchants' Association.

### CHICAGO

Jan. 27-Feb. 3—National Automobile Show, Coliseum and First Regiment Armory.  
Jan. 27-Feb. 3—Annual Automobile Salon, Drake Hotel.  
Jan. 29-31—Automotive Electrical Association's Annual Meeting, Congress.

### January 27

10:00 A.M.—National Automobile Dealers' Association's Directors' Meeting, La Salle.

### January 29

10:00 A.M.—Sixth Annual Convention, N. A. D. A., LaSalle.  
8:00 P.M.—Annual Banquet, N. A. D. A., LaSalle.  
N. A. C. C. Advertising Managers' Convention (tentative date).

### January 30

10:00 A.M.—Concluding Session, N. A. D. A., LaSalle.

### January 31

10:00 A.M.—N. A. C. C. Directors' Meeting.  
10:00 A.M.—N. A. D. A. Directors' Meeting, LaSalle.  
10:00 A.M.—Franklin Automobile Co.'s Sales Conference, Congress; Luncheon, 1:00 P. M.

Evening—Central and Western Oldsmobile Dealers' Meeting-Dinner, LaSalle.  
S. A. E. Meeting and Dinner, Congress.

### February 1

Hupmobile Luncheon and Dealers' Meeting, Congress.



## CONCERNING MEN YOU KNOW

J. E. Pickens has resigned as advertising manager of the Selden Truck Corp., Rochester, N. Y., to take charge of the sales service division of Sheffield-Fisher, Inc., Rochester, N. Y., to specialize on direct-by-mail campaigns, sales promotion, sales magazines and house organs. Nearly four years ago Pickens organized the advertising department of the Selden corporation. He came from the Federal Motor Truck Co., Detroit, with which he was connected for practically five years in the transportation engineering, sales promotion and advertising departments.

Lon Credelle, an Atlanta accessory dealer for several years and one of the best known automobile men in the southeastern field, has expanded the scope of his business and entered the wholesale field as well, covering Georgia territory for a number of well known accessory lines. The change becomes effective on Jan. 1, 1923. Credelle has served as president of the Atlanta Automobile Association and of the local accessory association.

Goodhue W. Smith, one of the leading automobile dealers of Waco, Tex., died at his home last week. He had been ill for several months.

Charles Emery Brenner, Peoria, Ill., credit manager of the Avery company, died at his home last week.

C. H. Hobson, formerly secretary of the Gillette Rubber Co., and the New Jersey Car Spring & Rubber Co., has been appointed assistant to R. B. Tracy who is sales manager and advertising manager of the Paul Rubber Co., Salisbury, N. C.

T. Earl Jarrard, assistant sales manager to M. B. Leahy, general sales manager of the Durant Motor Co., is leaving his Long Island City post to become sales manager of the Durant Motor Co. of Michigan, with headquarters at Lansing. J. W. Hawk, whom he succeeds at Lansing, will assume Jarrard's former position at Long Island City headquarters.

David L. Gallup has been appointed consulting engineer for Bencke & Kropf Mfg. Co. on Rayfield carburetors and thermostats. Gallup has been connected with the engineering department of Nordyke-Marmion as a consultant for a number of years and previously was in charge of the automobile engineering course at Worcester Polytechnic.

J. E. Fields, well known in the industry's sales circles, has been named director of sales for Chalmers cars, by Arthur E. Barker, vice-president in charge of sales of Maxwell Motor Corp. Fields has just resigned as sales manager of Liberty Motor Car Co., which company he joined after a period of service as sales executive at Hupp. Fields' earliest connection with the industry was as a Chalmers distributor at Fargo, N. D., taking this contract at the time Hugh Chalmers took over the former Thomas-Detroit.

Francis W. Davis, who has been with the Pierce Arrow Motor Car Co. of Buffalo, N. Y., for the past 12 years in various capacities and more recently in the truck division as consulting engineer in charge of design, experimental work, testing and quality, has severed his connection and is now in business for himself as a consultant engineer, specializing in problems of design, manufacture and operation of motor cars,

trucks and auxiliary equipment. He is located in the Metz building, Waltham, Mass.

Charles M. Fitch, for several years manager of the Falls Motors Corp., Sheboygan Falls, Wis., has taken a position with the Nordyke & Marmion Co., of Indianapolis, in general charge of the body manufacturing plant it is building.

Charles Warfield, has been appointed Haynes district sales manager for the states of Utah, Wyoming, Colorado and the Kansas City territory.

William T. Bush, for several years a sales executive of Studebaker and Packard, has resigned as director of sales of Gray-Dort in Canada. His plans for the future have not been announced.

Oscar M. Brede has been promoted to the position of assistant sales manager of Hinkley Motors, Inc., specializing in the replacement end of the business which the company is now developing. He will also retain general charge of the service department.

S. L. Kirby has been appointed district sales manager for the Peerless Motor Car Co. of New Jersey. He has been assistant manager of the Buick-Philadelphia branch.

William N. Shaw, vice-president of the New York Air Brake Co., has resigned in order to devote all his time to the Eisenmann Magneto Corp., of which he has been president for the last four years, and to other interests.

H. R. Matheny has announced his resignation from the position of factory manager of the Winton Motor Co., Cleveland, to accept the position of director of sales with The Vig-Tor Axle Co. of Cleveland.

L. L. Hardin, banker and business man of Columbia, S. C., has joined the Anderson Motor Company of Rock Hill, S. C., as treasurer.

C. H. Becker, sales manager of the Saxon Motor Car Co., Detroit, has resigned that position and accepted a position as general manager of the J. W. Goldsmith, Jr., Grant Co., of Atlanta, Hudson and Essex distributors, to succeed Samuel C. Porter, who resigned to assume the presidency of the Porter-Minchon Co., a new dealer organization.

A. J. Stewart has resigned as general manager of the Midwest Tire & Sales Co., Quincy, Ill., to become district manager in the Illinois and Missouri territory of the Iowa Cork Tire Co., Des Moines. Frank H. Kathman, secretary-treasurer of the Midwest company, will take over duties of president and general manager of the company and Henry A. Ipperson has been made assistant manager in the organization.

W. Howard Metcalf, retiring president of the Automobile Accessories Business Association and secretary of the Motor Truck Association of Philadelphia, who recently was elected to the state legislature from Delaware county, was the chief speaker at the meeting of the Lehigh Valley Automobile Trade Association, in Allentown, Pa.

J. Ross Jennings, for a number of years with the Weinstock-Nicols Co., of San Francisco and Los Angeles and prior to that with Chanslor & Lyons, has been appointed assistant to Commissioner William M. Webster of the Automotive Equipment Association. He will also serve as secretary of committees of the association.

Distributors declared themselves well satisfied with the showing made by the light six models in the first year and with the popularity attained. Fall sales in both the light six and Elite models were declared to be heavy.

### DUNLOP TIRE CO. REORGANIZED

NEW YORK, Dec. 11—Reorganization of the Dunlop Tire & Rubber Corp., of America has been completed, following a month's meeting in New York of the directors of the English company. The big plant at Buffalo with a capacity of 13,000 tires a day, will be put into operation at once, giving employment to from 8,000 to 10,000 men. This factory, which was completed two years ago, never has been in operation, activities having been suspended after the completion of the plant because of financial conditions.

## Boillot, Driving a Peugeot, Wins Sixth Florio Cup Race

268½ Miles Is Covered in Seven Hours, Nine Minutes, Seven Seconds

(Pictures on page 27)

PALERMO, Sicily, Nov. 23—(By Mail) —Driving a Peugeot racing car fitted with a Knight type four-cylinder engine, Andre Boillot captured the sixth Florio Cup race by covering 268½ miles over a wild Sicilian course in 7 hr., 9 min., 7 sec., thus maintaining an average of 34.2 miles an hour. This is the second time that Boillot has won over this course, his first victory being in 1919, when he captured the Targa Florio with a 122 cubic inch Peugeot.

Second position was won by S. O. D. Segrave on a 300 cubic inch racing Sunbeam, his time being 8 hr., 15 min., 7 sec. Bequet, a Frenchman driving a Peugeot similar to the winning car, came in third less than two minutes behind the Englishman. Chassagne, driving a six-cylinder Sunbeam, was still running when the race was called off.

There were only nine starters in the race, which was held over four laps of a very wild mountainous course starting from sea level and rising to 3000 feet, with 1600 distinct turns per lap. On the first round Meregalli on a 183 cubic inch Diatto overturned by taking a corner at too high a speed. The mechanic was killed on the spot and the driver broke his arm. Minoia, on a 91 inch O. M., abandoned at half distance with a broken third gear. Lopez, on a similar car, cracked a water jacket. Arnone on a Diatto had to abandon with broken brake cables, and Maserati with a similar car punctured his oil radiator and had to abandon after running some distance on salad oil.

The winning Peugeot was fitted with Goodyear straight side tires, used for the first time in a European race. They went the entire distance without a change. The Florio Cup is a trophy put up by Vincenzo Florio for annual competition. Its previous winners have been Itala, Isotta-Fraschini, Fiat, Nazzaro, and Ballot. This trophy will be contested next year for the last time.

### CLUBS OPPOSE DRIVERS LICENSE

COLUMBUS, O., Dec. 16—A conference of secretaries and representatives of fifty-four automobile clubs in Ohio was held at Columbus recently when legislative matters were taken up. The proposed law to license all drivers in Ohio was not approved, as it was thought best to wait to see how the law works in sixteen states which are trying it. It is estimated that 1,500,000 people in the Buckeye State drive automobiles and the job to examine them physically, morally and optically would be a big one.

The proposed gasoline tax of three cents on the gallon was disapproved.

## Columbia Distributors Place Orders for Six Months' Output

DETROIT, Dec. 16—Distributors of the Columbia Motor Car Co. last week signed contracts aggregating total production for the first six months of operation in 1923, a total that will reach about 13,000, according to W. L. Daly, vice-president in charge of sales. Forty per cent of production in the first three months will be closed models and 35 per cent in the second quarter.

The company declares itself to be in strong financial condition at the closing of the year and with a greatly increased sales and distributing organization will be in position to realize strongly on the potential business of the new year. In strengthening its sales group the company declares itself now adequately represented in every important center.

## BUSINESS NOTES

The Reo Motor Co. declared an extra dividend of 1 per cent and the regular quarterly dividend of 1½ per cent both payable Jan. 2 to stock of record Dec. 15.

Mack Truck, Inc., has declared an initial dividend of \$1 on the common stock and the regular quarterly payments of 1¼ per cent on the first and second preferred stocks.

Morse Chain Co. has just completed its new factory in Detroit, where it will manufacture all sprockets and adjustments used in Morse front end drives and the new Morse silent chain bus transmission. The new building provides a total manufacturing space of 60,000 ft. besides quarters for the sales and engineering office.

A full story has been added to one of the factory buildings of the AC Spark Plug Co., Flint, Mich., to increase their production facilities.

The Southern Truck & Car Corp., Greensboro, N. C., has been completely reorganized and has resumed operation. Dr. W. P. Knight is president of the company and C. E. Lowe, secretary and treasurer and general manager.

The Tire Products Manufacturing Co. has been organized and incorporated at Salisbury, N. C. with \$100,000 capital, to engage in the automobile accessory manufacturing business.

The Twin Piston Ring Corp. will remove its plant from West Orange to larger quarters at 227-229 High street, Newark, N. J. The new factory will be equipped with the modern machinery and will begin production by Jan. 1. Preparations are being made for a much larger output.

Offices of the Dall Motor Parts Co. have been

moved from Vermilion, O., to Cleveland, O., Postoffice Station D. The new plant is at Garfield Heights, Cleveland, and is conveniently arranged for the handling of replacement pistons.

Schlarp Carburetor Corp., 2151 Belmont avenue, Chicago, has been incorporated with a capital of \$125,000, to manufacture and deal in automobile accessories and carburetors.

Dent Auto Equipment Co., 4832 Cottage Grove avenue, Chicago, has been incorporated to manufacture and deal in radiator caps.

Ground has been broken for the first factory unit of the Mengel Body Co.'s plant to be constructed at Fourth and G streets, Louisville, Ky. This unit will cost approximately \$350,000.

Chester Rahn, Rock Island, Ill., and Fred Stroninger, Peru, Ill., have bought out the Sedanette Top Co. in Wabash, Ind., and will continue the business which was established six years ago. S. E. Marsh, former owner, will be identified with the new management in a sales capacity.

The General Battery & Supply Co., which will move its business from Coal City to East Moline, Ill., Jan. 1, is expending about \$15,000 upon remodeling of the Fuller factory building for its uses.

The Tennessee Rubber Co. has been organized and incorporated at Murfreesboro, Tenn., with \$25,000 capital, to engage in the rubber and tire manufacturing business.

The Chapman-Marvin Co. has been organized and incorporated at Jacksonville, Fla., with \$50,000 capital, to establish there an automobile agency.

## Prizes to Be Given Away in National Show Answer Contest

NEW YORK, Dec. 16—The management of the National Automobile Shows has announced a popular contest for the best answers to one or all of three questions, designed to promote interest in the coming national shows. The questions are:

In what way are the National Automobile Shows of value to the public?

In what way are the National Automobile Shows of value to my company?

In what way are the National Automobile Shows of value to me?

The writer of the best answer will be awarded a watch valued at \$200 and the writers of the second and third best answers will be awarded watches valued at \$150. The awards, it is announced, will be based on the reasons given and not on the style of writing. Competitors may answer any one or all three questions but must not write more than 500 words on each question. The second question is primarily for persons engaged in the automotive industry. Answers are to be sent not later than Jan. 3, 1923, to S. A. Miles, manager of the National Automobile Shows, 366 Madison Avenue, New York City.

## URGE LOAD LAW REPEAL

LOUISVILLE, Ky., Dec. 16—An organization has been formed by the Truck Operators' Assn. to take legal steps to repeal the load limit law introduced by State Senator Bright at the last session of the General Assembly and passed by that body. It is claimed by the association that this law practically puts all trucks of more than two-ton capacity out of commission for four months of the year and thereby increases the cost to the farmer. The association plans a state-wide campaign to have the law either amended or repealed.

## FORD BUYING ANTIQUES

BOSTON, Dec. 16—Bostonians have learned one reason for Henry Ford coming here frequently the past several weeks. He is seeking to get some colonial odds and ends for his home. He has been down to Plymouth and nosing about among the antiquarians there, and also among some of those in Boston. When he decides to make a purchase he looks at the entire lot and takes it all. A reporter that kept in touch with him one day this week figured out that he spent about \$40,000 in less than an hour gathering up some things. He requested that little be said about this hobby because when he was buying something in Ohio a few years ago, and the word got around, his home at Dearborn was swamped with people for weeks who had antiques and novelties of all sorts to sell him.

## PAIGE-DETROIT CUTS MELON

DETROIT, Dec. 16—Declaration of a common stock dividend of 100 per cent by the Paige-Detroit Motor Car Co. will bring the total capitalization of that company to approximately \$6,800,000, made up of \$4,000,000 common and \$2,800,000 preferred, all of which is outstanding. The stock dividend is payable on Dec. 29 and a cash dividend of three per cent will be paid on common stock Jan. 2. The regular quarterly preferred dividend also is payable at that time.

## MITCHELL CREDITORS' COMMITTEE

CHICAGO, Dec. 16—Herman Waldeck, vice-president Continental & Commercial National Bank, Chicago, is chairman of a committee of creditors organized for their interests and for the purpose of advising and cooperating in the plan of reorganization and refinancing of the Mitchell Motors Co., that is under way.

## Proposed Iowa Legislation Seeks Lower License Costs

### Fee Now Higher Than In Any Other State; Other Automotive Bills

DES MOINES, Ia., Dec. 16—Among the legislation which is scheduled to be introduced at the coming session of the Iowa legislature, which meets in Des Moines early in January, are a number of bills which will have a direct bearing upon the motor trades industry of the state. One of the most important in its bearing announced thus far is a bill which will be fathered by Secretary of State Ramsey and the state automobile department which seeks to make a material reduction in the license fees.

Iowa now stands almost at the top among the states of the union in the amount of money paid by motorists in license fees.

Another bill which will be watched closely is one now under draft by officials of the Iowa League of Municipalities, an organization of city officials, looking toward regulation of motor busses operating in cities. Mayor Gnagey of Waterloo is head of a committee from the league appointed to draft such a law and he insists that some action must be taken which will give cities the right to regulate busses and provide an operating tax sufficient to compensate cities for the injury to streets caused by operation of busses.

## TORONTO DEALERS HOLD SHOW

TORONTO, Dec. 15—The Toronto Automobile Trade Assn. has reversed its decision against holding a closed car show this month. As there is no sufficiently commodious and centrally located building available for this purpose, the members of the association will hold the show in their individual show rooms which are being uniformly and seasonably decorated. The show opens Dec. 9 and will continue until midnight on the following Saturday, all show rooms being kept open until 10 o'clock for the benefit of those who do not find it convenient to visit them during the day.

## SOUTHERN SHOW FEB. 17

ATLANTA, Ga., Dec. 14—The Southern Automobile Show at Atlanta, sponsored by the Atlanta Automobile Assn. will be held Feb. 17 to 24, inclusive, in the City Auditorium. D. C. Black is president of the Atlanta Automobile Assn. and C. V. Hohenstein is executive secretary. The offices have recently been moved from the Connally building to 412 Gould building.

## R. & V. MOTOR SCHEDULE

EAST MOLINE, Ill., Dec. 15—The R. & V. Motor Co., within two weeks will be operating on full schedule and indications are that after the plant gets under way on this schedule further additions to the force will be made.



## IN THE RETAIL FIELD

The Ross Walton Co., formerly of 312 N. Broad street, Philadelphia, distributor of Oldfield tires, has removed to 2400 Chestnut street, in the Guaranty Industrial Building.

O. Moore, formerly in the restaurant business, has opened the Florence Avenue Garage, at 5319-5329 Florence avenue, Philadelphia. In addition to storage, the company has a department of automotive equipment sales.

Ware Bro., 5918 Baltimore avenue, West Philadelphia, community garage operators and dealers in automotive equipment and tires, have taken the agency for Maxwell cars.

The Bearings Service Co., Philadelphia, has moved from 721 N. Broad street, to 1208 N. Broad, where it has larger quarters.

The Coolbaugh-Macklin Motor Co., 3723-3725 Walnut street, Philadelphia, has been appointed distributor of the Haynes car and has established a thoroughly equipped service station at 3712-3716 Sansom street.

The Philadelphia Motor Sales & Service Co., 2427-2429 N. Broad street, Philadelphia, is opening new showrooms for the Fox air-cooled car.

Stockberger & Espy, formerly of the Ottumwa (Iowa) Auto Co., have formed a company to handle the Chevrolet.

The Fleming Motor Co., Sioux City, Ia., which formerly handled only trucks and tractors has taken on the Nash agency.

Merrill E. Stevens, former Nash dealer at Sioux City, Ia., has given up his agency and become sales manager for the J. V. Thorndike Co. there.

The Murphy-French Automobile Co., Sioux City, Iowa, has taken over the Studebaker agency.

The Cash-Bissell Co. has been organized and incorporated at Jacksonville, Fla., with \$15,000 capital, and will establish in that city a large garage and service station.

The Main Street Garage has been organized and incorporated at Bartow, Fla., with \$25,000 capital, and will establish in that city a large garage and service station.

The Dade City Motor Co. has been organized and incorporated at Dade City, Fla., with \$50,000 capital, to establish an automotive agency and service station.

J. N. Stinson, Dodge dealer at Waycross, Ga., has started construction of a new building to be used as display rooms and service station, which, when completed, will be one of the finest exclusive automobile buildings in the smaller towns of Georgia.

The Atlanta office of the Buick Motor Co. announces the establishment recently of the following new Buick dealers in the Southeast: McMinnville Buick Co., McMinnville, Tenn.; Riddle Buick Co., Walterboro, S. C.; Tazewell Buick Co., Tazewell, Tenn.; J. O. Morgan, Brunswick, Ga.

Steve M. Solomon, Jr., of Macon, Ga., has purchased the interests of his partner, Kingman Moore, in the Kingman Moore-Steve M. Solomon, Jr., Co., Dodge distributors, and the business now is conducted under Solomon's name only.

W. H. Chambers, of Atlanta, has been named vice-president of the Lifsey-Chambers Co., Peerless distributors, the company being known as the Lifsey-Hill-Smith Co. prior to Chambers' affiliation. Julian Lifsey remains as secretary and treasurer, and Dr. T. P. Hinman is president.

The Orlando Jordan Co. has been organized and incorporated at Orlando, Fla., with a capital stock of \$10,000, and will distribute the Jordan car in that section of Florida.

A. F. Guirkin, D. C. Fussell and J. W. McGee, Jr., have formed a company at Raleigh to do a wholesale and retail business in automobiles, motor trucks and vehicles.

Saskatchewan Motor Co., Regina, Sask., Canada, has assumed the distribution, wholesale and retail, of the full Durant line of automobiles.

Geff-Caughman Auto Co. of Columbia, S. C., has contracted to handle the Velie in Richland and four adjacent counties.

C. C. Davis has purchased the interest of his partner, W. W. Culver in the Davis-Culver Motor Co., 131 N. Cherry street, Galesburg, Ill., and will continue the business under the name, C. C. Davis Motor Co. The firm has been Studebaker distributor in two adjoining counties.

Arcade Garage Co., Columbus, O., has taken a long-time lease on a store building at Front and Elm streets which will be remodeled into a modern garage and service station. In addition to a repair department there will be a paint shop and a top and curtain department.

The new \$300,000 home of the Covey-Ballard

Motor Co., Ford dealers at Salt Lake City, Utah, is ready for occupancy. It is located on Main & 5th South street. It is a 3-story concrete structure. Its total floor space will be about 85,000 sq. ft. The company has started a house organ to be called The Covey-Ballard News. It is an attractive publication, and printed on good paper. Graham Lawrence, advertising manager, is the editor.

Two new and important distributing contracts were awarded last week by the Dort Motor Car Co. The Hudson Motor Car of Louisville, Ky., was granted territory covering most of the state of Kentucky. Consideration territory in Texas was allotted to the J. L. Jennings Motor Co. of Abilene, Texas. In addition to these distributing contracts the Dort last week awarded 73 dealers franchises, almost half of which were additions to the Dort retail organization.

The W. J. Brown Motor Co., Inc., at 201 Travis street, Shreveport, La., has taken on the Hupmobile agency for that part of Louisiana and east Texas.

The Dade City Motor Co., Dade City, Fla., capital stock \$50,000, to deal in automobiles, supplies and accessories, and to operate garage, has been incorporated.

Moore & Jackson Motor Co., Gallatin Pike, Nashville, are distributing the Moon automobile products, in various models.

The L. W. Jordan Co., St. Paul, is making plans for a sales, service and garage building, 105x190, running through the block to face two streets, two stores, cantilever roof construction. Ramps will be built. The usual custom is to be reversed, the offices and show room and service garage to be on the second floor and the shop and used car department below. The company represents Dodge Bro. cars and Graham trucks at 118 W. Seventh street.

The Reed Motor Supply Co., St. Paul, has bought a three-story building at Franklin and W. Third streets and a garage 22x60 at the rear. The building, 60x60, will be changed into a battery station and accessory store to be occupied Jan. 1. The company distributes U. S. tires and Columbia batteries.

H. J. Harris, formerly service manager for the Packard Motor Car Co., in Pittsfield, Mass., and Earl B. Hull, formerly with the Alden Sampson Mfg. Co., have opened an automobile repair shop under the firm name of Harris & Hull at the New West Street Garage in Pittsfield.

P. Babou has taken over the management of the Broadway Garage, Chicopee Falls, Mass.

C. H. Langford, Ford dealer at Conyers, Ga., for many years, has purchased an interest in the C. C. Baggs Auto Co., Atlanta Ford dealers, and the name if the company under the change becomes the Baggs-Langford Motor Co., 137 South Pryor street. The new company handles the Ford and Lincoln in the Atlanta territory.

The Star Auto Co. has been organized at Erwin, Tenn., by C. T. Bickley and T. J. Quisenberry, both of that city, and has established a distributing agency in that section of Tennessee handling the Studebaker, Durant and Star.

The Peace Garage of Birmingham, Ala., has recently been acquired by the Co-Operative Tire and Accessory Co. It will continue under the management of William Towers and the assistants that he now has with him.

McCormack Bro. Motor Co. of Birmingham, Ala., has added the Jordan to its line of cars which also includes the Peerless and the Oakland.

The Preston Motors Co. of Birmingham has opened a sales agency at Huntsville, Ala., for the sale of the Premocar.

The "81" Tire Co., Birmingham, Ala., had the formal opening of its new building on automobile row Tuesday, Dec. 5. Souvenirs were given and music furnished.

The Indeeds Tire Co. has moved into its handsome new home at Houston, Tex., This company, under the management of Frank Treadway, in five years has grown from a "mere hole in the wall" to one of the leading tire and tube houses in Texas.

George W. Ehrhart, Decatur, Ill., has been made Stutz car agent through the central Illinois territory. He will continue to represent the Pierce Arrow car for which he has been distributor for 15 years.

Roll & Robinson have purchased the K-B Tire Shop, Galesburg, Ill., and will conduct the business as the National Vulcanizing Shop. Both men have had 11 years' experience in the tire business.

Fred W. Woellhaf Co., Burlington, Ia., has been named distributor for the Star car.

## Distribution Policies of Star and Durant Are Told

### Production Increase Causes Change; Stars Being Made at Rate of 175 a Day

DETROIT, Dec. 15—Field representatives of the Durant and Star car products of the Lansing plant of Durant Motor Co. of Michigan were notified of changes in distribution policies of the two models at a meeting this week. The changes were occasioned principally by the increased production of the Star and by the largely increased dealer representation in the territory served by the Lansing plant.

Production on Stars has been increased to approximately 175 daily and will reach 300 soon after the first of the year. A schedule of 90,000 for 1923 has been set, and this will be supplemented by 96,000 to be built at the plant now under construction. Shipments to the Pacific coast have been discontinued with the completion of the Oakland plant.

Deliveries of closed bodies which have handicapped production up to this time are now reaching proportions required by sales and within two weeks the company expects to be on an even basis. Durant car business is reported slowed down from the early season rush but maintaining a satisfactory volume.

### NEW HAYNES DEALERS

KOKOMO, Ind., Dec. 18—Six new distributors and 23 new dealers have been added to the sales representation of the Haynes Automobile Co. in the last few weeks. They are as follows:

Distributors: Robin Bros., Montreal, Quebec, Canada; Coolbaugh-Macklin Motor Co., Philadelphia; Levand Automobile Co., Inc., Houston, Tex.; Roth Motor Co., Louisville, Ky.; Kent-Horn Co., Inc., Duluth, Minn., and A. H. Vayo & Co., Omaha.

Dealers: Hill Motor Machine Co., Montreal, Canada; J. C. Hudson Motor Co., Eldorado, Ark.; Orange County Haynes Co., Santa Ana, Cal.; A. E. Block, Elgin, Ill.; C. M. Aaron, Kokomo, Ind.; Charles E. Redington, Greensburg, Ind.; Stone & Kilgore, Zanesville, O.; J. J. Wehl Motor Sales Co., Marietta, O.; George B. Arner Co., Lehigh, Pa.; Frank Foti, Ringtown, Pa.; A. C. Lubbers, Cedar Grove, Wis.; F. L. Harrington, Wyoming, Ia.; Hoover Auto Co., Oskaloosa, Ia.; A. C. Carter, Prestonsburg, Ky.; Henry Porter Baldwin, Springfield, Mass.; B. F. Goodrich, Duxbury, Mass.; Imperial Garage Co., Lawrence, Mass.; Clarkton Motor Car Co., Clarkton, Mo.; J. H. King, Portageville, Mo.; Parish Motor Co., Sikeston, Mo.; Columbus-Haynes Co., Columbus, O.; Lewis Motor Sales Co., Logan, O., and Lindenwald Garage, Hamilton, O.

### RUBBER COMPANY FAILS

IOWA CITY, Ia., Dec. 18—The Mississippi Valley Rubber Co., has filed voluntary petition in bankruptcy in the U. S. district court in Davenport, with liabilities of \$134,286.40. Its assets are listed at \$112,263.19.

# The READERS' CLEARING HOUSE

## Questions & Answers on Dealers' Problems

### Garagemen's Lien Rights in Illinois

Q—A is the owner of an automobile, we make some repairs for the amount of \$29 and A sells the automobile to B. Can we take an attachment on the car even though it is B's possession?—Wynes Battery Station, Moline, Ill.

A—In Illinois a garagekeeper has the right to hold a car for the repair charges until such charges are paid. This retaining of possession is under what is called his common law lien. Now if the owner or his agent or another induces you to deliver up possession on some claim or pretext which amounts to fraud then you may recover possession of the car by a writ of replevin. For example, if A tells you he wants to try out the car and see if the repairs are satisfactory when he will pay you, should he refuse to bring the car back you could replevin it.

The rule or theory is that you did not intend to part with possession or give up your lien. For under this lien possession is absolutely essential. Get this point. A promises to pay and a later failure to pay would not constitute such a fraud in securing possession that would give you the right to replevin. But, should, for example, the owner or other tell you that he had money in the bank and that he would drive over and bring it to you, and fail to do so, once he had the car in his possession, then you could replevin. These nice distinctions are not well enough understood by garagemen.

Now under the new lien law in Illinois applying to garagekeepers he is given a lien on cars for storage or repairs and he need not retain their possession to enforce it. That is he can extend credit to his customer and have his lien too. But, he must file his lien notice, within 60 days after delivery of the car on which he claims the lien, in the office of the county recorder of deeds.

The statute prescribes a form for filing and I would advise every garagekeeper to secure and keep for ready use a bunch of these blanks. For lack of these blanks and for lack of a proper knowledge of the law I take it that you have not preserved your lien on the car in question. If the 60 day period is not up you may still file your claim as indicated above, and then foreclose upon the lien.

Under the foreclosure you secure from the recorder of deeds a certified copy of the lien, and with a request endorsed thereon for a foreclosure of the lien, deliver to the sheriff who shall be re-

### The Readers' Clearing House

**T**HIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

Readers' names will not be published with articles, if a request to this effect is received with the letter. The name and address should be given, however, so that we can send a copy of our answer direct by letter. This saves waiting for the answer to be published, which sometimes occurs several weeks later, depending upon the space available.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

quired to take possession of the car in question as by a writ of replevin. After this a sale is had and the proceeds are first applied to the costs of the proceedings, then to cover the lien claim.

It does not matter that the car has come into the possession of another through purchase and sale, even though such purchaser be an innocent party, unless it can be said as a matter of law that the lien claimant so neglected to file his claim that it would amount to a fraud to permit him to assert it, or that he acted collusively with the seller against the innocent purchaser of the car.

### CHEVROLET BEVEL GEAR DRIVE

Q—Is it possible to use a new style bevel gear drive, as used in the late model Chevrolet 490, installing same in an old style differential housing?—Oldsmobile Co. of Decatur, Ill.

This cannot be done.

### Changing Generator Voltage

Q—What would have to be done in order to change a 6 volt automobile generator to a 12 volt machine?

1—The general rule in doubling the voltage of a machine of this type is to use wire three sizes finer in both the field and armature. For example if each field coil formerly was made with 100 turns of No. 17 wire the change would require using 200 turns of No. 20 wire, which is just half the size of the No. 17. In the same way if each armature coil had 7 turns of No. 17 the change would require the use of 14 turns of No. 20 wire.

2—Is it possible to change a 6 volt machine which possibly generates a maximum of 7 volts so as to get a maximum of 8 volts and still have the same ampere output with the 8 volt operation?—Louis P. Quinn, Ridgefield, Wash.

2—A 6 volt generator will charge a battery either when it is discharged or charged. Under these two conditions the variation in voltage is approximately from 6 volts to 7.5 volts and the ordinary generator adapts itself to these variations in voltage. It is also possible to use a 6 volt generator on an 8 volt battery which when charged comes up to 10 volts. In doing this however, the field winding of the generator will be somewhat overheated and if a long trip should be taken in hot weather the generator might burn out.

The effect of the 8 volt battery is also noticed in the action of the cut-out which will tend to pull a heavier discharge current before the contacts open. This condition in the cut-out however can no doubt be corrected by stiffening the springs slightly. A 6 volt machine can be also used as a 12 volt machine for short periods of time, the heating of the field coil being the limiting factor.

We have also seen a 6 volt machine used for 12 volt battery by connecting an outside resistance in series with the shunt field winding. If for example the shunt field when connected to a 12 volt battery would draw 4 amperes, then enough resistance should be added so that on a 12 volt battery the shunt field would only get 2 amperes which would reduce the heating and also the magnetic effect to the same condition that would be experienced with 6 volts.

With this change in design it will be found that the armature generates 12 volts but the speed must be somewhat higher to make it cut in. A 12 volt cut-out should also be used.



## A Large Sales and Service Building

Q—We are enclosing a sketch of a lot 125 x 115 ft. on which we contemplate building a garage. We would like to have the following departments: Shop in which I contemplate having eight mechanics, battery charging, paint shop, showroom for four new cars, accessory and stockroom and floor space for 100 cars.

We would like a plan showing the shop on the second floor in the rear of the building and a separate plan showing the shop on the main floor.—Robert A. Smith, Santa Fe, N. M.

On account of the odd proportions of this lot it has been very hard to design a building that would be economical of floor space and at the same time well laid out architecturally and efficient. It is practically impossible to arrange for space enough to garage 100 cars unless three-quarters of each floor is given over to that purpose. As laid out there is space for 99 cars when cars in the shop and paint shop are all counted in, four to six cars on the display floor, and three receiving quick service would make a total of 103 altogether.

Garage spaces 50 ft. in width are the most economical, but here, dividing in two either way, makes the space too wide. For the sake of uniform construction we have placed a row of columns through the center the long way of the building. These columns extend up through and support the roof trusses. The other columns are for the support of the second floor only and are placed to facilitate car movement and storage.

In a two-story building there is not enough light on the first floor for shop

purposes so we will not consider your request for a plan with first floor shop. Another consideration is that if you use your first floor as shop space it will be necessary to transfer all the storage to the second floor and that will necessitate raising every car that you take in. Second floor storage is unpopular with the motorist and a first floor dark shop is unpopular with the men and tends toward inferior work. These two reasons offset any advantage that may seem pertinent.

The positions of the car display and accessory store might be reversed but we think it is more advantageous to get the accessories and parts as close as possible to the quick service department where customers are waiting for adjustments. No one who drives a car can wait around in or near a well equipped store without seeing several things he wants and which he will buy if he has the money.

### REGARDING FORD REAR AXLE HOUSINGS

The present type of Ford rear axle housings are beveled at the points where they join the driveshaft housing, instead of being machined with a shoulder as formerly. When using one of these new type housings for repairs, on a car having the malleable type driveshaft roller bearing housing, it will be necessary to replace the roller bearing housing and driveshaft ball bearings, using the present forging type roller bearing housing No. T2583B and present type bearing No. T2591B.

### GRINDING, REBORING AND LAPPING CYLINDERS

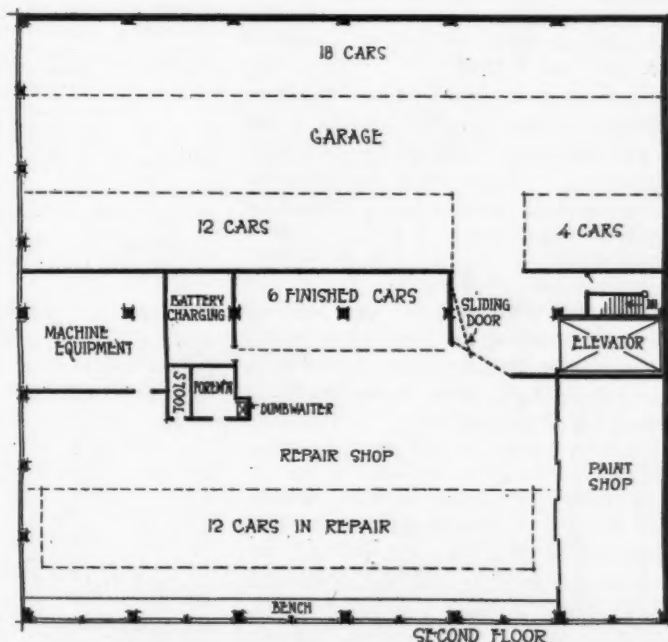
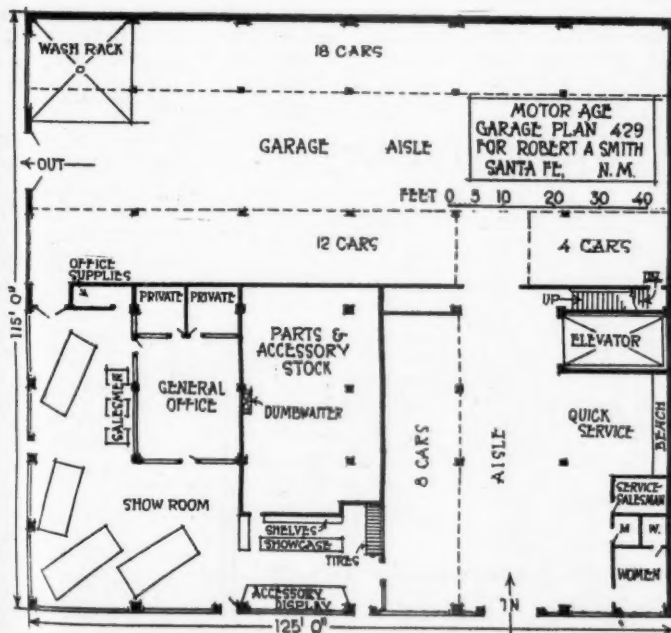
Q—We having an argument in regard to renewing cylinders in a certain six cylinder car. The cylinders in question are worn so badly that they are about .010 of an inch larger at the top than at the bottom.

The question on which our argument is based, is in regard to the advantages and disadvantages of the three following methods: First, grinding with a cylinder regrinding machine. Second, reboring with a boring machine and third, lapping out with emery grinding compound.—J. S. Vevang, care M. B. & Co. Garage, Watertown, S. D.

1—About the only chance of using the straight lapping method would be in the case where a cylinder is slightly oversized so that a piston .002 or .003 inches oversize could be used. Under these circumstances the piston could be lapped in with cylinder lapping compound, so that it would not bind and stick when the engine begins to heat up. When it is necessary, however, to remove any appreciable amount of metal, even as much as .002 inches, it is advisable to use other methods.

With the cylinder regrinding method, you can bring the cylinder to size and the lapping process can be eliminated.

The reboring method will also bring the cylinder to size and either the regrinding or reboring will be necessary where you have such a difference as .010 inches between the top diameter and the bottom. The reboring method does not give as smooth a surface as the regrinding and consequently, it is a good plan to lap the cylinder after it is rebored to give it a good finish.



#### Architectural Service

In giving architectural advice, MOTOR AGE aims to assist its readers in their problems of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and, in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an intelligent handling of the job. Among other things, we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

What departments are to be operated and how

large it is expected to be.

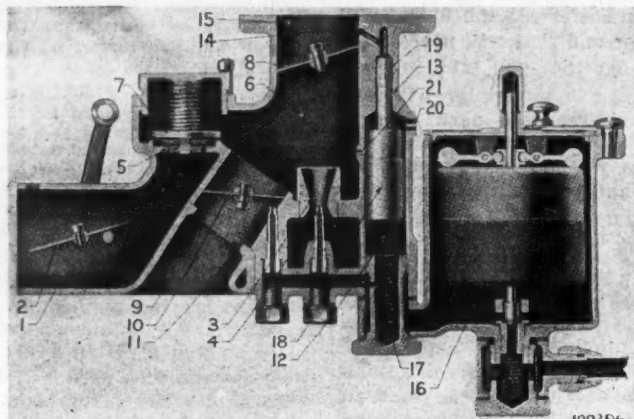
Number of cars on the sales floor.

Number of cars it is expected to garage.

Number of men employed in repair shop.

How much of an accessory department is anticipated.

## Adjustment of Ball & Ball Carbureter



Q—We have an eight cylinder Oldsmobile, 1919 model, equipped with a Ball & Ball carburetor which gives too rich a mixture. The adjustments will not cut it down. What are the adjustments for this carburetor. Some of the valve springs seem to be weak but the motor does not miss. Would this affect the carburetion. —Earl Shaefer, care Auto Repair Shop, Exira, Ia.

The Ball & Ball carburetor is one designed to have fixed passages and practically no adjustments, with the possible exception of the springs on the auxiliary air valves. Referring to the cut shown herewith, gasoline comes into the float chamber and at this point we might mention a possible cause of your trouble. If dirt accumulates under the needle valve which regulates the flow of gasoline to the float chamber it will doubtless maintain the level too high and may account for the rich mixture that you are getting.

From the float chamber gasoline flows around through the two nozzles 4 and 11 and also goes through passage 17 to chamber 12. In ordinary operation air comes through passage 1 and fixed opening 5 to the chamber 6 where it meets the gasoline vapor. Air comes through passage 1 and goes around behind and up through venturi 3, drawing gasoline vapor from nozzle 4. This mixture then goes up past throttle valve 8 to the intake manifold and then to the engine.

This part of the operation is known as the primary stage, being the first action of the carburetor to be considered. At high speed the opening of throttle valve 8 by its last bit of motion opens throttle valve 10, which allows air to come past nozzle 11, carrying additional gasoline vapor to the engine. Increased suction gives additional air to the mixture through the fixed opening 5, which opening is, however, not fixed at high speed, due to the rise of air valve 7 against the action of the spring. Two of these valves are used but only one is shown.

Suction above throttle 8 acting through passage 14 lifts piston 19 and draws ad-

ditional gasoline into cylinder 12. Opening of the throttle then drops piston 18, causing a rise of gasoline in chamber 12. Additional air is then drawn through opening 20 and carries the heavy gasoline vapor through opening 21 to mixing chamber 6, giving a suddenly richer mixture for quick acceleration.

The trouble in question is possibly due to springs on air valve 7 being too stiff, possibly due to some mechanic taking them out and stretching them. The correct remedy would be to install 2 new springs which are known to be correct in tension. If such are not available the present springs should be shortened by cutting off one coil at a time until operation is satisfactory. This possibility and the chance of dirt at the float chamber needle valve constitute all the suggestions we have to offer, as there

are no adjustments on the carburetor; that is, considered from the ordinary standpoint.

### ORPHAN CAR INFORMATION

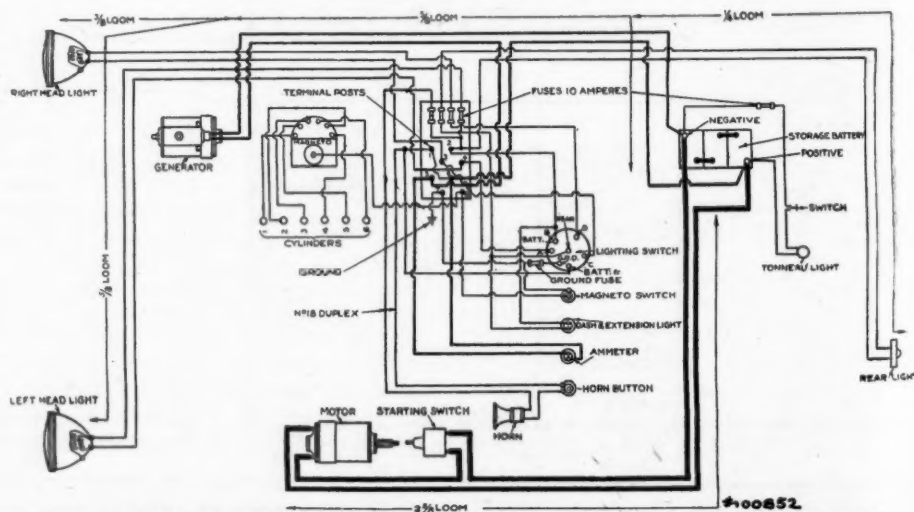
Q—We have here a "Norwalk" car underslung, which uses 40x4½ Clincher Tires, and also an "Oldsmobile" car, which takes 43x5 Clincher Tires. We are unable to get these tires here and would like you to give us the name of some company from whom we could get same. We should consider it a favor if you would be good enough to wire us the above information.—Snell Motors Co., Ltd., Calgary, Canada.

Answering your letter of September 23rd addressed to MOTOR AGE regarding obsolete sizes and styles of tires which you wish for your Norwalk and Oldsmobile cars, wish to say that you may obtain the 40x4½ clincher tire for the Norwalk car from the Grow Tire Company, 323 Columbus Avenue, Boston, Mass. This company had in stock two Lee puncture proof tires of this size listed in our "Odd Tire Size" Department and which we do not know have been sold as yet.

In regard to the 43x5 clincher for your Oldsmobile, wish to say that we have none of this particular size listed with us, but believe you could use a 42x4½ clincher on your Oldsmobile, which has the same rim dimensions as the 43x5, and of these we have listed two companies; one of which is the Grow Tire Company, address above, and the other the Amalgamated Tire Stores Corporation, 1934 Broadway, New York City, who have listed some Swinehart, Pennsylvania and Miller tires in this size.

We suggest that you write these companies or, better still, we will be glad to write them for you, which will save possibly one week, in your knowing whether or not they have the tires in stock.

## Wiring on Jeffery Six



JEFFERY SIX CHESTERFIELD MODEL STARTING AND LIGHTING WIRING DIAGRAM

Q—Publish a wiring diagram for a Jeffery Six, Chesterfield model, using Bosch magneto ignition, Bijur generator and starter. This is a two wire system

with an ammeter instead of an indicator. —A. Reader.

The diagram requested is shown in the figure above.



## Proper Chamfer and Back Lash Needed on Starter Gears

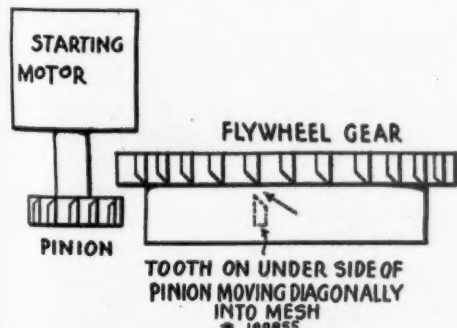
Q—A month or more ago we wrote you in regard to trouble we are having with a Gray Dort car but up to date have not seen or heard a word from you either by letter or through the columns of the magazine. This Gray Dort car is giving trouble with the starter teeth being chewed off by the pinion of the starting motor.

We put on a new Logan steel cut ring gear but this did not last as long as the old one. It was only on three months when it got to jamming so badly that the owner had to crank the engine by hand. The teeth are chewed off of the starter ring gear in four different places, although there does not seem to be anything wrong with the pinion on the starter. Can you suggest a way out of this difficulty?—Garage and Service Station, Rosetown, Sask., Canada.

As far as we are able to determine your first letter was never received by us, and we regret that this was the case as we take every possible means at our disposal of giving prompt service to our subscribers. In most cases we get an answer, with diagrams or cuts that may be needed, back inside of a week. This allows time for dictating necessary letters, making drawings, and having cuts and proofs made where necessary.

It is our opinion that the original trouble is in having the pinion meshed too closely with the flywheel gear. Bendix starter pinions should have about one thirty-second of an inch back lash, and you can tell this by looking through the inspection opening in line with the starter shaft. Then when you put on the Logan ring gear you may have put it on wrong. We understand that they are commonly made chamfered both ways, one on one side of the gear and the other at the other side.

For the purpose of showing the correct chamfer for the Gray Dort car, we have made the accompanying sketch, which is to be considered as though sitting in the driver's seat and looking toward the



radiator or front of the car. The starter is mounted at the left and in front of the flywheel and when the starter works, it draws the pinion forward to make it mesh with the flywheel. As the pinion begins to move it will have motion in two directions. First there will be rotational motion and second there will be motion forward. This will give a tooth on the bottom of the pinion a diagonal direction of travel as shown by the

dotted tooth, indicated at the right on top of the flywheel.

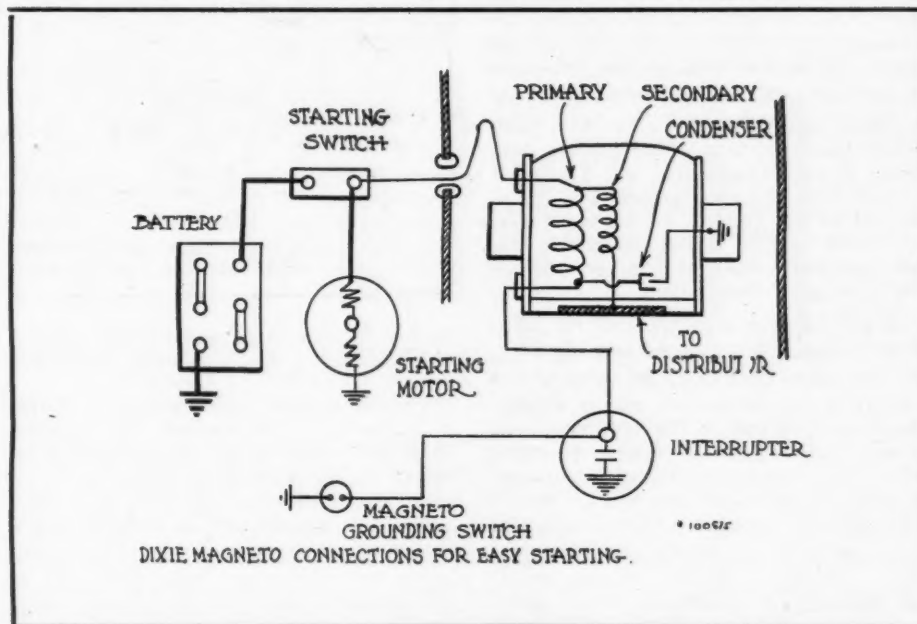
Considering this diagonal direction of the pinion tooth it will be seen why the chamfer must be as shown, so that there will be no chance of the teeth catching on edge and jamming. With this method of chamfer and a sloppy fit, that is much back lash, there will be no trouble encountered.

In case there is practically no back lash, and the teeth fit tightly together, it will be necessary to file out the bolt holes in the starter end bracket so that

the starter can be moved away from the flywheel enough to make the meshing loose. This is a tedious job but it must be done to get loose meshing.

It might be well also to check the operation of the pinion along the starter shaft, to see that it spins freely and does not bind or stick at either end. The screw shaft should be clean and dry, not oiled. Oil gums up the action, except where the shaft runs in oil, but on the Gray Dort this is not the case, so that no oil should be used on this shaft that carries the pinion.

## Adapting Dixie Magneto to Battery Ignition



Q—Publish sketch showing how the Dixie magneto may be made into a battery ignition system. Also give instructions.—Joseph Teresi, care Frankstown Road Garage, Pittsburgh, Pa.

On page 44 of the July 13th issue of *MOTOR AGE* there was published an article entitled "Easy Starting With Magneto Ignition," and in this article the connections needed on a Dixie magneto were given. We are, however, republishing the portion of that article which dealt with the Dixie magneto.

The method shown in the sketch above makes it possible to start using battery ignition, and when the foot is taken off of the starting switch, magneto ignition is again automatically obtained. The coils in the Dixie magneto have a primary winding, one end of which is normally grounded, while the other end connects to the interrupter. In the sketch, the normal ground which is at the top terminal, as shown on the illustration, has been removed and discarded and in its place the connection has been made to the motor side of the starting switch.

To make this connection it is necessary to take off the sheet metal cover plate at the side of the magneto and bore a hole through it. It is then necessary to insulate the hole with a piece of

fibre tubing, so that the wire connecting the starting switch to the terminal of the coil can go through the side of the magneto without being rubbed by the cover plate. The action of the magneto when running is now the same as before, except that the primary coil gets its ground through the starting motor.

The battery ignition effect is obtained when the driver of the car steps on the starting switch. This allows battery current to flow to the starting motor and back to the battery, but as the starting switch also has a small wire connected to it, a small amount of current will flow to the primary of the magneto winding and through the interrupter points to ground. Then when the interrupter points open the current through the primary is stopped and a spark is obtained from the secondary winding.

This action is the same as in a battery ignition system, and while the magnets produce a slight voltage, it is not enough to interfere with the action as a battery ignition system. When the engine starts and the driver takes his foot off the starting switch the starting motor stops and again serves as a ground connection for the magneto. With this method the regulation grounding switch is still used for stopping the engine.

## Cadillac 1912 Generator For 6 Volts Only

Q—We have a 1912 Cadillac equipped with a Delco starter generator, and we would like to change the windings on this so that we can use a six volt battery instead of the present 24 volt battery. If this can not be done we would like to know the best way to adapt this for use as a six volt generator only, in which case we will crank the engine by hand.—Anderson Bros. Garage, Hamilton, Wis.

We do not think it is possible to rewind this machine for operation as a six volt starter, and even if this were done it would be quite expensive.

There is no question however but what the method illustrated in the diagram above will do very well for all requirements except starting. The No. 3 terminal, being one side of the armature as well as one end of the shunt field, is shown grounded, the No. 1 terminal being the connection from the live generator brush. Connecting No. 1 and No. 2 together might give too much charging current to the battery, so the regulating two gang switch is recommended with the resistance coils of iron or German silver wire on the back.

It will be seen that the coil on No. 1 switch is shorter than the coil on No. 2. In operation both switch buttons are pushed in for low speed, and if at high speed the current to the battery is too great, the No. 1 button is pulled out. If this does not regulate enough it is pushed in and No. 2 pulled out and if this is not sufficient, both buttons can be pulled out, throwing all of the resistance in series with the shunt field. If this should not be enough resistance it would be necessary to rewind these resistances with coils of greater length or with smaller wire. Lights and ignition circuits can both be connected to the side of the ammeter on which a wire is shown marked "To lights." Any standard six volt cutout can be used.

### ANOTHER ORPHAN CAR

Q—We have a Pullman 1916-model with Apelco electrical system. How can we change this to a straight six volt system, it now being a 6-12 volt system?

1—We do not think such a change would be practicable, as it is nearly out of the question to have a direct connected 6-volt starting motor with the slight reduction possible by the chain drive used on this Pullman car.

2—Where can parts for this car be secured?

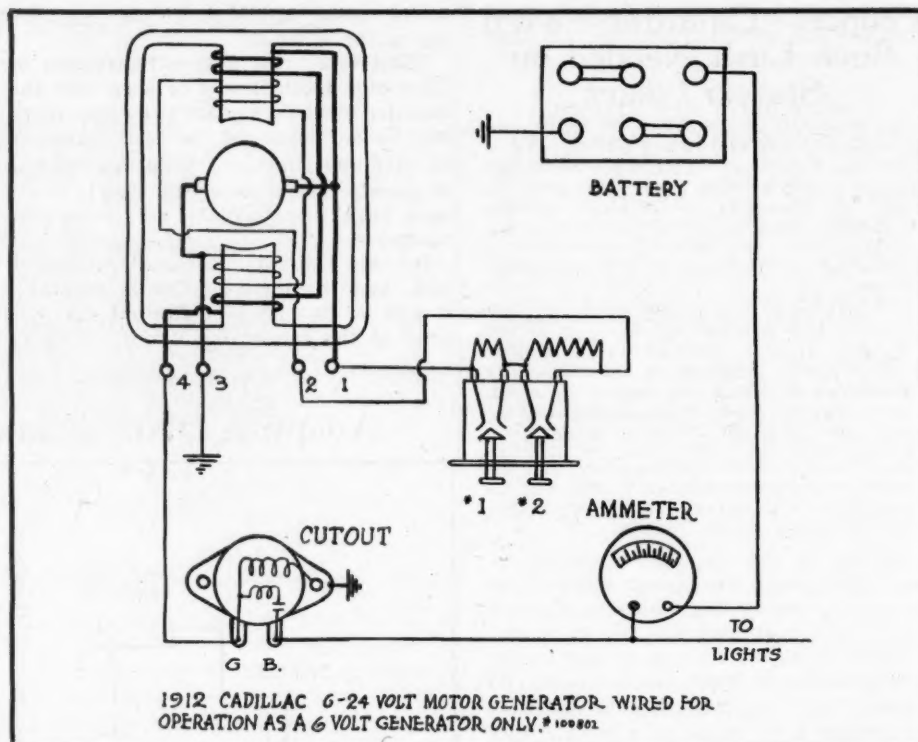
2—This information will be given by letter.

3—After this motor is rewound for 6 volts will it handle the starter as well as proveously did on 12 volts?—A. Subscriber.

3—It would not have enough power to turn the engine over, consequently the scheme is impracticable.

### INTERRUPTER SETTING ON DIXIE MAGNETO

Q—What causes a car equipped with a Dixie magneto to start hard? The mag-



nets have been recharged but this makes no difference. While running, however, the car works fine.—A Reader.

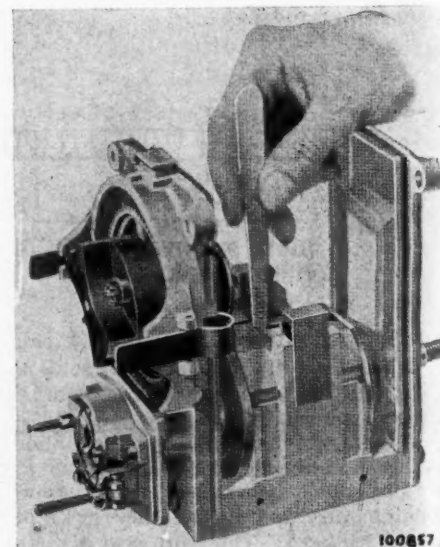
To see whether the trouble is in the magneto or not, a wire can be removed from one of the spark plugs and held a slight distance from the plug to see if a spark jumps when the starting motor is cranking the engine. If a spark jumps at this slight air gap and also across the gap inside the plug while cranking, it shows the trouble is due to carburetion and not to ignition.

Assuming, however, that the trouble is in the ignition system, there are two likely conditions. One is that in recharging the magnets the work was improperly done and the other is that the interrupter is not properly set with respect to the inductor position. In recharging the magnets they should be drawn across the charger so that the tips of the U-shaped steel bars leave the magnetizer last. The magnets should never be drawn across so that the upper portion of the magnets or center portion of the U leaves the magnetizer as this will weaken the magnets rather than strengthen them. Then when it is time to put the magnets on the magneto a keeper should be applied while each magnet is still on the charger and should be kept on until the magnet is in place on the magneto. This will maintain the magnets at their maximum strength.

Before the magnets are replaced, however, the gap between the rotor or inductor should be checked as indicated above. The opening and closing of the interrupter points should be checked electrically either by using a battery and lamp or battery and buzzer as the position that is vital is the one in which the interrupter points just begin to open. Before doing this work, they should be set at .018 in. with the cam bearing

against the fiber bumper, so as to produce the maximum opening. The rotor shaft should now be turned in the direction of normal rotation and at the instant that the interrupter points open the gap between inductor and pole piece should be .040 in. for most types of Dixie magnetos.

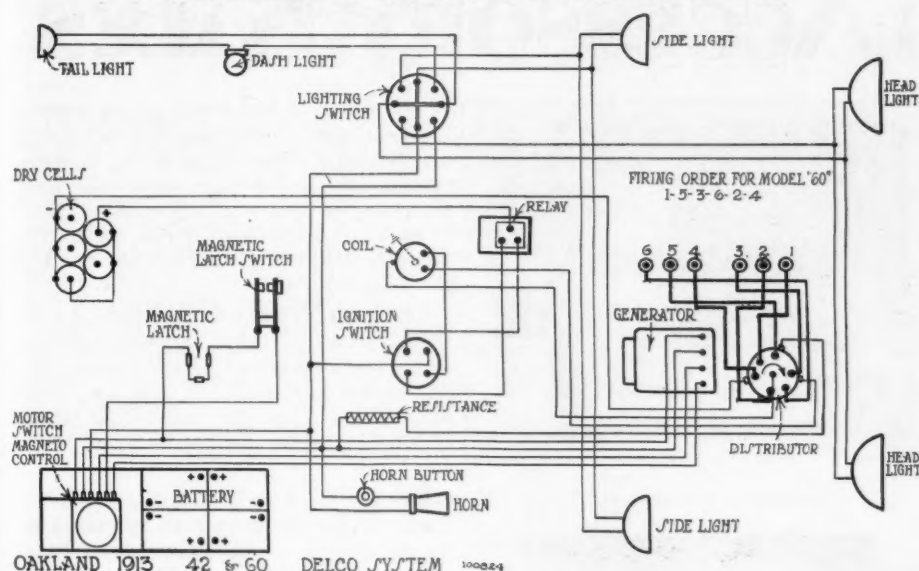
Be sure and see that the edge of the rotor being checked is the one that is leaving the field pole and not the one approaching. In the illustration the magneto shown is of the aero type, but the general method is similar in all types. If the setting is not correct, it can be changed by loosening the screws around the interrupter and rocking the interrupter housing with respect to the frame of the magneto which carries the magnetic pole pieces.



Checking air gap on Dixie magneto when points open



## Generator Circuits On Oakland Car



Q—Publish internal and external circuits of Delco motor generator and system used on Model 42, 1913 Oakland car. This generator has four terminals mounted on top.—Dorn Mfg. Co., Larkins, Fla.

1—Wiring diagram of the car is shown

herewith. Internal circuits of the generator are the same as for the 1912 Cadillac which are shown on the opposite page with a method of using the 6-24 volt motor generator as a plain 6-volt generator only.

would also be well to check the valve timing by putting a piece of paper in between the number 6 exhaust valve stems and the push rod which operates against it. Then turn the engine over until either number 1 or number 6 piston is checked and found to be on dead center.

If this is the firing dead center of number 1, the piece of paper should be released a moment later when the number 1 piston has gone down about 1/32 in. If this is not the right position, the crank should be turned 1 revolution to get the firing position of number 1 piston. If the ignition, compression, valves and valve timing are O. K., we can now check up on the carburetion and the best way would be to try another carburetor which is known to be operating O. K. on some other car, preferably on a car of the same model. It would also be well to check the inlet manifold for possible airleaks and, if in doubt, the manifold should be removed and the various gaskets re-shellaced in place.

In checking a 6 cylinder engine it is sometimes helpful to kill the front three cylinders, by taking the three high tension wires and laying them on the engine, and run on the rear three. With some engines this might cause the trouble you complain of by sending a combustible mixture into the exhaust pipe which might be fired by the explosion from the active cylinders. Usually however, with the engine throttle down, no harm results and it is possible to carefully check three cylinders at a time, it being much easier to tell if one of the three is missing than to check one out of six. In similar manner the other three cylinders can be checked.

### EFFECT OF CONNECTING BATTERY TO MAGNETO POST ON FORD CAR

Q—Will a 6 volt storage battery burn out the magneto coil assembly if connected to the magneto post on coil box. If so, how long should it give service or would it give service after doing same?—Ransom Battery Co., Ransom, Ill.

1—We assume that you refer to a Ford car and that the storage battery was connected to the magneto post of the coil box instead of the battery post, and thereby was also connected down to the magneto terminal on top of the flywheel housing. Under these circumstances two things would happen. First, current would flow from the battery through the magneto coils and if left connected would discharge the battery, although no permanent damage should result to the battery. It is also quite likely that the magneto would be partially or wholly demagnetized so that the car would no longer run on magneto. This condition is not serious, however, as it is a very easy matter to recharge the magnets while in the car. An instruction sheet telling how to do this will be sent to you.

### COLD WEATHER AFFECTS IGNITION SYSTEM

Q—We are having some trouble with a Studebaker six which we wish to ask you about. This car runs perfectly in warm weather, but as soon as the weather begins to get cold it is hard to start and will backfire and blow out the muffler. During real cold weather it will not hit regularly at all, and acts as if there was a short circuit in the ignition. Last winter we put on breaker points, new distributor and new coil. It helped some but very little. We set the spark plug points at .031 which the Studebaker people recommend, but it will burst the muffler as fast as we repair it and keep right on missing.

The hot air stove is turned on so as to give the greatest amount of heat to the carburetor but that does not seem to do any good. We are certain the trouble is in the ignition system but cannot figure out the cause. It is commencing to cause trouble again and we would like to have you suggest a remedy.—R. O. Graham, Graham Garage, Jameson, Mo.

Proper operation of an engine depends on its mechanical condition, the ignition and the carburetion and, as it is not very difficult to check the condition of the ignition system, we will start at this point.

First, have all of the high tension wires loose on the spark plug, so that one can be removed at a time, and then start up the engine. With the engine running slowly, take one high tension wire off of a plug and hold it within one-eighth inch of that plug, so that the spark will have to jump the gap in the air and the plug gap beside. Now count the sparks until 50 or 60 have jumped and if there is no missing, the ignition at that cylinder is O. K. In similar manner check the spark at the other plugs.

It might also be well to make a sim-

ilar test by holding the high tension wire within 3/16 or 1/4 inch of the engine itself, as this is about the equivalent of the 1/32 in. gap at the spark plug which, being in the cylinder, is under compression. If on this test the spark would jump 6 or 8 times and then miss a shot and then jump 4 to 5 times more and miss again, it would show trouble in the ignition system. Such trouble would be in the coil, condenser, interrupter points or possibly a poor connection in the wiring or switch.

Another possibility would be a burnt place in the distributor cap which would allow the spark to jump to ground. If the spark is O. K., however, it would then be well to test the spark plugs or use new ones. There is no very good way of testing spark plugs unless they can be put under compression, or unless they are taken apart and the porcelain tested for high tension leakage, by using a spark that can jump 3/4 of an inch at least. In checking the interrupter points they should be set at .020 inches.

Another condition of the ignition which should be checked is the timing. The interrupter points should just begin to open with the lever in the retard position when the engine is on firing dead center or just a trifle past, not to exceed 1/32 inch on the piston.

If the spark is O. K., and the plugs are good and the timing correct, we can then forget the ignition and check up some other condition. As far as the engine is concerned it should have good compression in all cylinders and it might be well to check the valves to see if there is a slight sticking action. It

# BOOSTING ACCESSORY SALES

IN "Squeeks & Rattles" last week was a wheeze about a dealer in Illinois who has hung a sign in his window which reads, "We sell everything the motorist uses except profanity and if you use our goods, you won't need to use that," which shows more than one thing for that dealer—he believes in his wares and their ability to fulfill their mission.

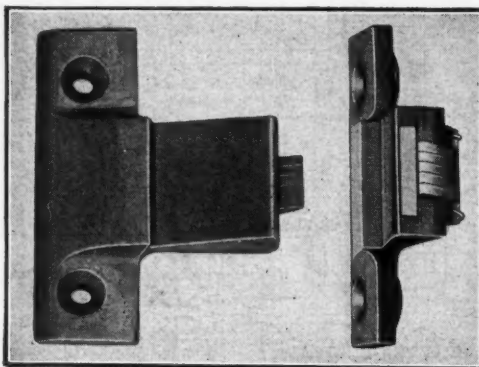
Conservative buying on the dealers' part is just as necessary to success as snappy selling—by "conservative" we mean that a motorcycle dealer has no business buying sedan flower vases, nor should you carry Cadillac size spark plugs if your business has never been anything but with Chevrolet owners.

Lovejoy Mfg. Co., 39 Brighton Avenue, Boston, has introduced the Lovejoy Hydraulic Shock Absorber shown in the cut on this page. It is filled with oil to the level of the plug "P." On the rebound of the spring, the arm "A," which is attached to the axle by a flexible connection, is pulled down, and acts through "B" and "C" on the piston "D." Pressure is then exerted by the piston on the oil in the inner cylinder "E," and as soon as a definite maximum pressure has been reached, the valve "F" opens, and allows oil to escape from the cylinder. In cold weather, when the oil is more viscous, the valve opens earlier and wider, automatically taking care of any changes in the oil due to a drop in temperature. When the automobile spring is again compressed, the piston is raised at once by the spring "S," and a charge of oil is drawn into the cylinder around the large valve "G."

Vanguard Bumpers will soon be placed on the market by the Metal Stamping Co., Long Island City, and is an individual design intended for the lighter cars. It has a broadened bumping surface (both upward and downward) which affords maximum protection, while its simple patented two-piece construction allows for ample adjustment. It is made only of 2-in. width steel, in either japan or nickel finish, and may be easily attached with any Lyon standard fittings. The bumper is built in two sizes—Model "A" for cars having a frame width of from 25¼ to 28¼ in., and model "B" for 28¼ to 31¼ in.

The Trojan Drag is an automobile tow chain tested to 3250 pounds breaking strain. It is nine in. long, 5 in. wide and 3 in. thick when in the tool compartment and is 18 ft. in length when stretched out. Two feet of ends are thickly canvassed. It is made by the Reece-Hilton Co., Troy, N. Y.

The Melville Foot Rest is a device designed to afford greater driving comfort. The principle involved is that of a friction hinge. The drivers' foot depressing the accelerator rocks the forward end of the rest downward. The weight of the relaxed foot maintains the accelerator in the depressed position while the friction



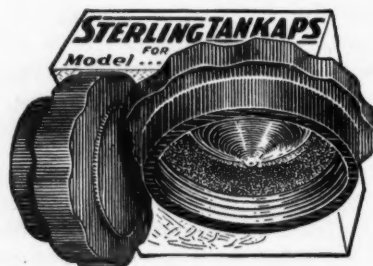
American striker plates



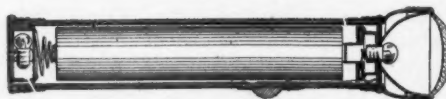
Vanguard bumper



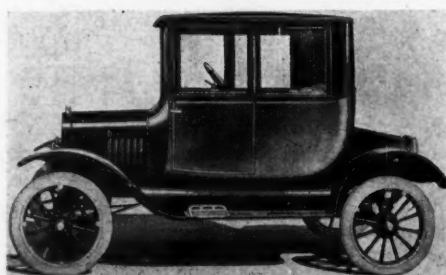
Gemco bumpers



Sterling Tankaps



Lite-Site Flashlight



Coupe De Luxe Body for Fords

of the hinge is great enough to support the foot and prevent further accidental acceleration. The result is the same as though the accelerator were just flush with the toe board at all speeds. Made of polished aluminum. Price, \$3.75. The Melville Machine Co., 500 Belevue Avenue, Detroit.

The series of bumpers shown on the rack on this page are the complete line of bumpers produced by the Gemco Mfg. Co., Milwaukee, Wis. In addition to the line is made in the Small-Kar model which is intended for use on Ford, Chevrolet and Gray cars.

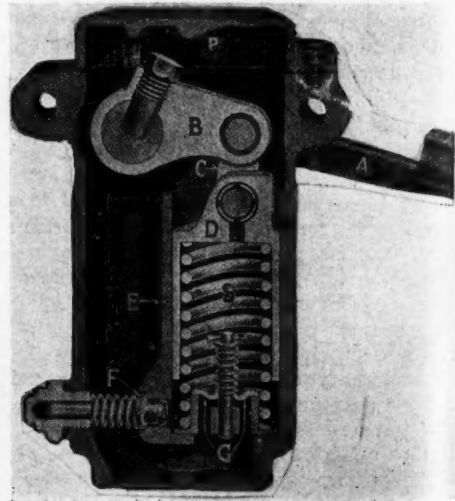
For 1923, Gemco Giant and Little Giant Bumpers are equipped with special ornamental clamps on the front bars. These are copper coated and finished in nickel, the design being cast in the malleable and painted with green enamel.

Sterling Products Corp., St. Louis, Mo., announces the Sterling Tankap shown in the illustration on this page. With an assortment of twelve of these caps it is possible to fit any tank on any car.

American Striker Plates are made for enclosed cars by the American Governor Co., Anderson, Ind., and are designed to help in opening and closing and locking the doors. Ford size sells for \$3 per pair. John C. Hoof and Co., 159 W. Illinois Street, Chicago, are the distributors.

Many features are included in the coupe De Luxe body for Fords, made by the Coupe De Luxe Body Co., 3040 Locust Blvd., St. Louis. The windshield is in two sections, both of which are adjustable. A carrier and tail light are attached to the rear. A gasoline gage and dome light are also a part of the equipment with this body which sells at \$299, f.o.b. St. Louis.

The Lite-Site Flashlight is the product of the Light-Sight Products Corp., Warren, Pa., and is featured by an attaching device which makes it possible to attach it to any part of the car to be used as a utility spotlight.



Lovejoy shock absorber



# BOOSTING ACCESSORY SALES

The Midget Cyclecar Co., of Springfield, Mass., has just placed on the market a priming cup for Ford cars. The priming cup is installed in four special cylinder head bolts, replacing four of the old bolts. The bolts replaced are in front of the spark plugs. They are installed in about one hour by taking the head off and filing four "V" slots in casting. A three-cornered file is used by breaking off tip. The head should be turned over on the under side with spark plug hole. The casting is about 3/16 in. thick on the inside of the bolt hole.

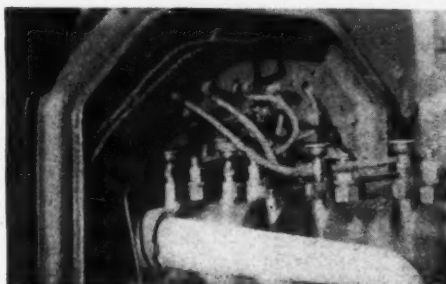
The casting should be filed from hole to explosion chamber about 1/8 in. deep; reverse file to level up "V" slot.

When this operation is finished a "V" slot on the inside of bolt hole is made. Place head back on motor and bolt down head, using the four new head bolts with cup, using bolt holes in front of spark plug looking at head from the carburetor side. A small gasket is furnished with each bolt to be put under the head of each bolt.

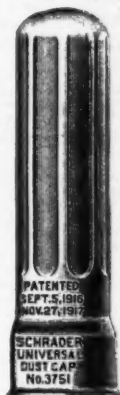
The illustration shows the new Schrader Dust Cap with combination rim nut and bushing. The advantage of this dust cap is the ease and rapidity with which it can be attached and detached. A few turns of the hand to the right and the dust cap is screwed on. To remove, simply reverse the operation. The point is to always screw the dust cap on by hand, but the combination rim nut and bushing should be screwed down tightly against the felloe of the wheel with pliers or a wrench. Made by A. Schrader's Son, Inc., Brooklyn, N. Y.

Graynie Spare Tire Lock is manufactured by the Graynie Corp., Chicago. It is made in all sizes to suit all kinds of spare tire carriers. It is a link chain of specially heat-treated steel, encased in cow hide as a protection against weather and wear. It will resist hack saw or file.

Paragon Disk Wheel Co., Portland, Ore., announces the Paragon Disk Wheel, the design of which is shown in the cut.



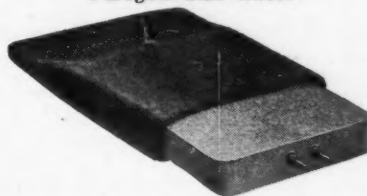
Priming cup for Fords



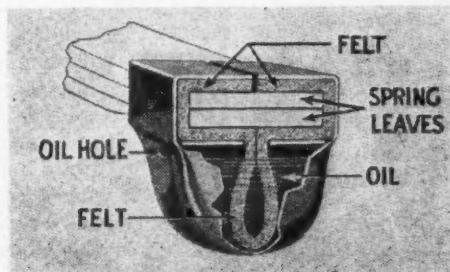
Schrader dust cap and rim nut and bushing



Paragon disk wheel



C. & S. electric warmer



K-M spring oiler



Improved self-closing pump



Graynie spare tire lock

They are made in all sizes, have demountable rims and outside valves.

The C. & S. Electric Co. of Warren, Pa., have recently placed on the market their new Electric Soapstone Warmer, which is really an old idea made thoroughly modern by adding electric heat instead of the artificial means.

The warmer is made of high grade soapstone, size 6x10x1 1/4 in. thick. There is a heating unit of 300 watts embedded in the soapstone so that all heat is at once absorbed by the stone and the heating unit is fully protected from injury in handling. It may be heated to the desired point in but a few moments and any ordinary flat iron cord and plug will fit the universal connector on the warmer. The electric soapstone warmer is light in weight and sells at \$5.

K-M Mfg. Co., Toledo, O., has brought out the K-M Spring Oiler shown and described in the cut. Price, 50 cents each.

The Imperial Primer is the product of the Imperial Brass Mfg. Co., 1200 W. Harrison Street, Chicago and sells for \$4.75 (Ford price \$4). The feature of the primer is that it aids starting in cold weather. The Improved Self Closing Pump, an integral part of the primer, is shown in the cut at the bottom of the page.

A six cylinder magneto, claimed to be the smallest of its kind, has been brought out by the Robert Bosch Magneto Co., Inc., 123 W. 64th St., New York City, the weight being 10 1/4 lbs.

A feature of this magneto is its magnetic field sleeve, which is movable with the interrupter housing, thereby producing the same intensity of spark in retard as in advance position, the timing range being 40 degrees.

This magneto is known as Type ZH-6, two of these having been used on the JL-6 Larsen Monoplane, when it broke the world's record for non-stop airplane flight at Roosevelt Field, L. I., New York.

The Cooper Directometer is the latest offering of the Cooper Mfg. Co., Marshalltown, Ia. and sells for \$10. It is an automobile compass, made of aluminum and designed for attachment to the windshield from where it can be seen plainly at all times. It shows in which direction the car is traveling and eight of the principal stations of the compass are delineated on its face in "luminous" letters.

We repeat, conservative buying is as important as quick sales and before buying any accessories of any kind, the dealer must have a pretty good idea of when and how he is going to dispose of them. If necessary, a little "research" work might help. Try to find out before offering for sale, if there is a demand for the article you offer.

# COMING MOTOR EVENTS

## AUTOMOBILE SHOWS

Erie, Pa.	Annual Automobile Show	Jan. 1-6
New York	Annual Show	Jan. 6-13
New York	National Automobile Body Builders' Show	Jan. 8-13
Oakland, Cal.	Fifth Annual Show	Jan. 13-20
Buffalo	Annual Automobile Show	Jan. 13-20
Philadelphia	At the Commercial Museum Bldg.	Jan. 13-20
Seranton, Pa.	Annual Automobile Show	Jan. 15-20
Hudson, N. Y.	Annual Automobile Show	Jan. 16-20
Cleveland, O.	Annual Winter Show, Cleveland Automobile Mfr's and Dealers' Assn.	Jan. 20-27
Milwaukee	Annual Automobile Show	Jan. 20-27
Baltimore	Annual Automobile Show	Jan. 20-27
Detroit	At the Municipal Garage	Jan. 20-27
Montreal	National Motor Show of Eastern Canada	Jan. 20-27
Seranton, Pa.	Commercial Car Show	Jan. 23-25
Chicago	Annual Show at Coliseum	
	N. A. C. C.	Jan. 27-Feb. 3
Chicago	Annual Automobile Salon	Jan. 27-Feb. 3
Ann Arbor, Mich.		Jan. 29-Feb. 3
Wilkes-Barre, Pa.	Annual Automobile Show	Jan. 29-Feb. 3
Portland, Ore.	Annual Automobile Show	Feb. . .
Minneapolis, Minn.	Annual Show	Feb. 3-10
Troy, N. Y.	Annual Automobile Show	Feb. 3-10
Winnipeg, Can.	Minto Barracks	Feb. 5-10
Charlotte, N. C.		Feb. 5-10
Lansing, Mich.		Feb. 5-10
Toledo	Annual Automobile Show	Feb. 5-10
Waterbury, Conn.	Annual Automobile Show	Feb. 5-12
Cincinnati	Automobile Show	Feb. 7-14
Kansas City, Mo.	Annual Automobile Show	Feb. 10 17
St. Louis	St. Louis Automobile Dealers' Assn.	Feb. 12-17

Kalamazoo, Mich.		Feb. 12-17
Flint, Mich.		Feb. 12-17
Atlanta	Annual Automobile Show	Feb. 17-24
San Francisco	Exposition, Auditorium	Feb. 17-24
Gr'd Rapids, Mich.		Feb. 19-24
Mt. Clemens, Mich.		Feb. 19-24
Louisville	Annual Automobile Show	Feb. 19-24
Trenton, N. J.	Annual Automobile Show	Feb. 21-24
Brooklyn, N. Y.	Annual Automobile Show of the Brooklyn Motor Vehicle Dealers' Association	Feb. 24-Mar. 3
Albany, N. Y.	Annual Automobile Show	Feb. 24-Mar. 3
Muskegon, Mich.		Feb. 26-Mar. 3
Des Moines, Ia.	Annual Show	Feb. 26-Mar. 3
Syracuse, N. Y.	Annual Automobile Show	Feb. 26-Mar. 3
Springfield, Mass.	Annual Automobile Show	Feb. 26-Mar. 3
Omaha	Annual Automobile Show	Feb. 26-Mar. 3
Indianapolis	Indianapolis Automobile Trade Assn.	Mar. 5-10
Bay City, Mich.		Mar. 5-10
Boston	Annual Automobile Show	Mar. 10-17
Newark, N. J.	Annual Automobile Show	Mar. 10-17
Washington, D. C.	Spring Show, Convention Hall	Mar. 11-17
Port Huron, Mich.		Mar. 12-17
Battle Creek, Mich.		Mar. 19-24
Alpena, Mich.		Apr. 2-7

## CONVENTIONS

Sioux Falls, Ia.	Annual Meeting, Automobile Trades Association of South Dakota	Jan. 15
Chicago	Annual Meeting, Automotive Electric Service Association	Jan. 29-31
Quincy, Ill.	Annual Meeting Illinois Automotive Trade Association	Mar. 19

## RACES

San Diego, Calif.		January
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# SQUEEKS & RATTLES

If You Know Any, Tell Them to Us

### A SALESMAN OF LONG AGO

A man came in through the big front door  
To see the cars on the salesroom floor.  
"I want to see, I want to know  
What new things you'll have at the Auto Show."

The salesman smiled in fiendish glee  
This simple prospect for to see,  
But the smile died out behind a frown  
When the prospect started to look around.

"Now where's the fuse box, I'd like to know?"  
But the question was deep for the salesman, so  
He hunted here and he hunted there,  
Under the prospect's haughty stare,

First under the hood, then under the cowl  
And the salesman's smile was mostly scowl  
And he finally said just like the rest,  
"This car don't need a fuse, I guess."

Then the prospect asked how you oil the clutch  
And whether she burned the gas up much  
And why there wasn't a thermostat  
And a lot of foolish things like that.

But the salesman said, "You understand"  
Those things are known by the service man,  
He's back over there, a mile or two  
And will answer the questions you want him to."

"But me, all I do is sell the cars,  
And technical things I just let rest."  
Then he walked away with his thumbs in his vest  
And kidded himself he had ditched the pest.

But the pest was the chief who had come to see  
Why the sales were poor in that territory  
Now the rest is painful, so choke that sob,  
For the salesman's hunting another job.

—"Hap"

San Diego speeders are sentenced to display large cards on their cars reading "Dangerous" when they are "caught." We suggest that they make a slight change and be more original and say, "Danger Bus."

The Readers' Cheering House is conducted to assist dealers in making snappy comebacks to customers who are smart. Readers' names will always be published unless a special request by radio is made two weeks before the question occurs to them. It would also be well to state whether a permanent file of Squeeks & Rattles is kept, for many times inquiries of an identical nature are asked by those who take their chances at getting their copy of MOTOR AGE on the news stands.

Inquiries not of a general nature will be answered by mental telepathy and any guy who gets personal with his questions has them answered the same way. C'mon in!

May Christmas find you in a healthy state and may you have turkey hash for the rest of the week and don't quarrel with the youngsters—let them play with their toys, then if they're broken, no one will be able to blame you.



## Specifications of Current Motor Truck Models

NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES	Final Drive	NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES	Final Drive	NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES	Final Drive
				Front Rear						Front Rear						Front Rear	
Ace.....30	1-1 1/2	\$2400	3 1/2 x 5 1/2	34x3 1/2 34x6	W	Corbitt.....E-22	1	\$1480	3 1/2 x 5 1/2	34x3 1/2 34x4	W	Gary.....K	3 1/2	\$3790	4 1/2 x 6	36x5 36x5d	W
Ace.....40	2	2850	4 1/2 x 5 1/2	36x4 36x7	W	Corbitt.....D-22	1 1/2	2200	3 1/2 x 5 1/2	34x3 1/2 34x5	W	Gary.....M	5	4450	5 x 8 1/2	36x6 40x6d	W
Ace.....60	2 1/2-3	3400	4 1/2 x 5 1/2	36x4 36x8	W	Corbitt.....C-22	2	2600	4 1/2 x 5 1/2	36x3 1/2 36x7	W	Geraix.....M	1 1/2	3100	4 x 5 1/2	36x3 1/2 36x7	W
Acme.....20	1	.....	3 1/2 x 5	35x5 35x5n	W	Corbitt.....B-22	2 1/2	3000	4 1/2 x 5 1/2	36x4 36x7	W	Geraix.....K	2 1/2	3500	4 1/2 x 5 1/2	36x4 36x8	W
Acme.....30	1 1/2	.....	3 1/2 x 5	34x3 1/2 34x5	W	Corbitt.....R-22	3	3200	4 1/2 x 5 1/2	36x4 36x8	W	Geraix.....	3 1/2	4500	4 1/2 x 6	36x5 40x12	W
Acme.....40	2	.....	3 1/2 x 5	34x3 1/2 34x5	W	Corbitt.....A-22	3 1/4	3800	4 1/2 x 5 1/2	36x5 36x10	W	Gotfredson.....20	1	2075	3 1/2 x 5 1/2	34x5 34x5	W
Acme.....60	3	.....	4 1/2 x 5 1/2	36x4 36x7	W	Corbitt.....AA-22	5	4500	4 1/2 x 6	36x8 40x6d	W	Gotfredson.....31	1 1/2-2	3000	4 x 5 1/2	36x6 38x7n	W
Acme.....60L	3	.....	4 1/2 x 5 1/2	36x4 36x7k	W							Gotfredson.....A	2 1/2	3375	4 x 5 1/2	36x4 36x7	W
Acme.....90	4 1/2	.....	4 1/2 x 5 1/2	36x5 40x10	W							Gotfredson.....B	3 1/4	4475	4 1/2 x 5 1/2	36x5 36x10	W
Acme.....125	6 1/2	.....	4 1/2 x 6	36x6 40x12	W							Gotfredson.....100	5-6	5500	5 x 8 1/2	36x6 40x14	W
American.....25	2 1/2	3350	4 x 6	36x4k 36x4dk	W	Day-Elder.....AS	1	1600	3 1/2 x 5	35x5n 35x5n	W	Graham Bros.....	1	1265	3 1/2 x 4 1/2	33x4 1/2 34x5n	B
American.....40	4	4275	4 1/2 x 6	36x5k 36x5dk	W	Day-Elder.....D	1 1/2	2000	3 1/2 x 5	34x3 1/2 34x5	W	Graham Bros.....	1 1/2	1325	3 1/2 x 4 1/2	33x4 1/2 36x6n	B
American.....50	5	4500	4 1/2 x 6	36x5 36x12	W	Day-Elder.....C	2 1/2	2400	4 1/2 x 5 1/2	36x4 36x7	W	Gramm-Pion.....10	1	1245	3 1/2 x 5	33x5n 33x5n	B
Armleder.....20	1 1/2	.....	3 1/2 x 5 1/2	34x3 1/2 34x6k	W	Day-Elder.....E	3 1/2	2750	4 1/2 x 5 1/2	36x4 36x7	W	Gramm-Pion.....15	1 1/2-2	1750	3 1/2 x 5	36x3 1/2 36x5k	I
Armleder.....40-B	1 1/2	.....	3 1/2 x 5 1/2	34x3 1/2 34x6k	W	Day-Elder.....F	3 1/2	3150	4 1/2 x 5 1/2	36x5 36x5d	W	Gramm-Pion.....65	1 1/2-2	2250	3 1/2 x 5	36x3 1/2 36x5	W
Armleder.....40-C	1 1/2	.....	3 1/2 x 5 1/2	34x3 1/2 34x6k	W	Dearborn.....E	5	4250	4 1/2 x 6	36x5k 40x6dk	W	Gramm-Pion.....20	2-2 1/2	2475	4 1/2 x 5 1/2	36x4 36x7k	W
Armleder.....HW-B	2 1/2	.....	4 1/2 x 5 1/2	36x4k 36x7k	W	Dearborn.....FX	1 1/2	1600	3 1/2 x 5 1/2	35x5n 35x5n	W	Gramm-Pion.....30	3	3300	4 1/2 x 5 1/2	36x5k 36x5dk	W
Armleder.....HW-C	2 1/2	.....	4 1/2 x 5 1/2	36x4k 36x7k	W	Dearborn.....F	1 1/2	2300	3 1/2 x 5 1/2	34x4 34x5	W	Gramm-Pion.....75P	3 1/2	4225	4 1/2 x 5 1/2	36x6n 42x9n	W
Armleder.....KW-B	3 1/2	.....	4 1/2 x 6	36x5k 36x5dk	W	Dearborn.....48	2	2590	3 1/2 x 5 1/2	34x4 1/2 34x7	W	Gramm-Pion.....40	4	3850n	4 1/2 x 5 1/2	36x6 36x5dk	W
Armleder.....KW-C	3 1/2	.....	4 1/2 x 6	36x5k 36x5dk	W	Defiance.....G	1	1525	3 1/2 x 5	35x5n 35x5n	B	Gramm-Pion.....50	5-6	4450n	4 1/2 x 6	36x6 40x6dk	W
*Atlas.....22	1	1495	3 1/2 x 5 1/2	34x4 1/2 34x4 1/2	W	Defiance.....D	1 1/2	1845	3 1/2 x 5	35x5n 36x6n	I						
*Atlas.....44	1 1/2-2	1950	3 1/2 x 5 1/2	36x6n 36x6n	W	Defiance.....E	2	2075	3 1/2 x 5	35x5n 38x7n	B						
Atterbury.....20R	1 1/2	2475	3 1/2 x 5 1/2	34x3 1/2 34x5	W	Denby.....31	1 1/4	1485	3 1/2 x 5	35x5n 35x5n	B	Hall.....1 1/2	1 1/2	3100	3 1/2 x 5	34x5n 38x7n	W
Atterbury.....22C	2 1/2	3375	4 1/2 x 5 1/2	36x4 36x4d	W	Denby.....33	1 1/4	2145	3 1/2 x 5	35x5n 38x7n	I	Hall.....2 1/2	2 1/2	3275	4 1/2 x 5 1/2	36x4 36x6	W
Atterbury.....22C	2 1/2	3475	4 1/2 x 5 1/2	36x4 36x4d	W	Denby.....35	2 1/4-3	2795	4 1/2 x 5 1/2	36x4 36x7	I	Hall.....3 1/2	3 1/2	4100	4 1/2 x 5 1/2	36x5 36x5d	W
Atterbury.....22D	3 1/2	4275	4 1/2 x 5 1/2	36x5 40x5d	W	Denby.....27	4	3895	4 1/2 x 5 1/2	36x5 36x5d	I	Hall.....7 chain	5	5100	4 1/2 x 5 1/2	36x5 40x6d	C
Atterbury.....22D	3 1/2	4375	4 1/2 x 5 1/2	36x5 40x5d	W	Denby.....210	5	4295	4 1/2 x 5 1/2	36x6 40x6d	I	Harvey.....W OA	2	2650	4 1/2 x 5 1/2	34x4 34x7	W
Atterbury.....8E	5	4975	4 1/2 x 6	36x5 40x6d	W	Dependable.....A	3 1/4-1	1650	3 1/2 x 5 1/2	34x5n 36x6n	W	Harvey.....WFA	2 1/2	2950	4 1/2 x 5 1/2	36x4 36x7	W
Atterbury.....8E	5	5125	4 1/2 x 6	36x5 40x6d	W	Dependable.....C	2	2350	3 1/2 x 5 1/2	34x5n 36x6n	W	Harvey.....WHA	3 1/2	3950	4 1/2 x 6	36x5 36x5d	W
Autocar.....21UF	1 1/2-2	1950	4 1/2 x 4 1/2	34x4k 34x6	D	Dependable.....E	3	2950	4 x 5 1/2	36x4 36x7	W	Hawkeye.....O	1	1375	3 1/2 x 5 1/2	34x5n 34x5n	I
Autocar.....21UG	1 1/2-2	2050	4 1/2 x 4 1/2	34x4k 34x6	D	Diamond T.....O-3	1-1 1/4	1975	3 1/2 x 5 1/2	36x3 1/2 36x4n	W	Hawkeye.....K	1 1/2	1645	3 1/2 x 5 1/2	34x3 1/2 34x5k	I
Autocar.....27H	2-3	2950	4 x 5 1/2	34x5 36x7	D	Diamond T.....T	1 1/4	2250	3 1/2 x 5 1/2	36x3 1/2 36x5	W	Hawkeye.....M	2	2145	4 1/2 x 5	36x4k 36x6k	I
Autocar.....27K	2-3	3075	4 x 5 1/2	34x5 36x7k	D	Diamond T.....U	2-2 1/2	2650	4 x 5 1/2	36x4 36x7	W	Hawkeye.....N	3 1/2	3700	4 1/2 x 5 1/2	36x5k 36x10k	I
Autocar.....26Y	4-6	3950	4 1/2 x 5 1/2	34x6 36x12	D	Diamond T.....K	3 1/2	3750	4 1/2 x 5 1/2	36x5 36x5d	W	Hendrickson.....O	1 1/2	2200	3 1/2 x 5 1/2	36x4n 36x5n	W
Autocar.....26-B	4-6	4100	4 1/2 x 5 1/2	34x6 36x12	D	Diamond T.....EL	5	4325	4 1/2 x 5 1/2	36x6 40x6d	W	Hendrickson.....N	2 1/2	2690	4 1/2 x 5 1/2	36x4k 36x7k	W
Available.....H1 1/2	1 1/2	2475	4 x 5	36x3 1/2 36x5k	W	Diamond T.....S	5	4500	4 1/2 x 6	36x6 40x6d	W	Hendrickson.....M	3 1/2	3000	4 1/2 x 5 1/2	36x5k 36x5dk	W
Available.....H2	2 1/2	2775	4 x 5	36x3 1/2 36x6k	W	Doane.....2 1/2	2 1/2	4100b	4 1/2 x 5 1/2	36x5 36x7	C	Hendrickson.....K	5	4000	5 x 6 1/2	36x6 40x6	W
Available.....H2 1/2	2 1/2	3100	4 x 5	36x3 1/2 36x8k	W	Doane.....3 1/2	3 1/2	5100b	4 1/2 x 5 1/2	36x5 36x5d	C	Huffman.....B	1 1/2-2	1795	3 1/2 x 5	34x3 1/2 34x6	W
Available.....H3 1/2	3 1/2	4175	4 1/2 x 5 1/2	36x5 40x5d	W	Doane.....6	6	6000b	5 x 6 1/2	36x6 40x6d	C	Huffman.....C	1 1/2-2	1695	3 1/2 x 5 1/2	36x3 1/2 36x6	I
Available.....H5	5	5375	5 x 6	36x6 40x12	W	*Dodge Brothers.....	3 1/4	730	3 1/2 x 4 1/2	32x4n 32x4n	B	Huffman.....D	2-3	2895	4 1/2 x 5	36x4 36x7	W
*Avery.....1	1	.....	3 x 4 1/2	34x5n 34x5n	I	Dorris.....K-2	1	2490	4 x 5 1/2	33x5n 33x5n	B	Hurlburt.....A-A	1-1 1/2	1950	3 1/2 x 5	34x5n 34x5n	W
Beck.....A Jr.	1 1/4	1285a	3 1/2 x 5	34x4 1/2 34x4 1/2	I	Dorris.....K-4	2-2 1/2	3400	4 1/2 x 5 1/2	36x4 36x7	W	Hurlburt.....B-B	2-2 1/2	2800	4 1/2 x 5 1/2	36x4 36x4d	W
Beck.....B-30	1 1/2	1350	3 1/2 x 5	34x5 36x6	I	Dorris.....K-7	3 1/2	4400	4 1/2 x 5 1/2	36x5 36x10	W	Hurlburt.....C-C	3-3 1/2	3475	4 1/2 x 5 1/2	36x5 36x5d	W
Beck.....C-40	2	1550	3 1/2 x 5	36x6 36x6	I	*Dort.....103	1 1/2	685a	3 1/2 x 5	31x4n 34x4n	B	Hurlburt.....D-D	4-4 1/2	4150	4 1/2 x 6	36x5 36x6d	W
Beck.....D-50	2 1/2	1950	4 1/2 x 5 1/2	38x7 40x8	I	Double Drive.....B	3	4000	4 1/2 x 5 1/2	36x6 36x6	W	Hurlburt.....E-E	6-6 1/2	4850	4 1/2 x 6 1/2	36x6 40x6d	W
Bell.....M (Iowa)	1	1495	3 1/2 x 5 1/2	35x5 35x5n	W	Duplex.....A	2	2775	4 x 5 1/2	35x5n 38x7n	W						
Bell.....E (Iowa)	1 1/2	2100	3 1/2 x 5 1/2	34x4 34x5	I	Duplex.....E	3 1/2	3500	4 1/2 x 5 1/2	36x8 36x8	I						
Bell.....O (Iowa)	2	2550	4 1/2 x 5 1/2	34x4 34x6	I	Duty.....22	2	1590	3 1/2 x 5	34x3 1/2 34x5	I	Indep't (Iowa).....B	1	1665	3 1/2 x 5	34x3 1/2 34x4	I
Bessemer.....G	1	1450	3 1/2 x 5	35x5n 35x5n	I							Indep't (Iowa).....G	1 1/2	2040	3 1/2 x 5 1/2	34x3 1/2 34x5	I
Bessemer.....H-2	1 1/2	1990	3 1/2 x 5	36x5 36x5	I	Eagle.....101	1 1/2	1875	3 1/2 x 5 1/2	34x5 34x5	I	Indep't (Ia.).....HI	2 1/2	2940	4 1/2 x 5 1/2	36x4 36x7	I
Bessemer.....J-2	2	2895	4 1/2 x 5 1/2	36x4 36x4d	I	Eagle.....100-2	2	2275	3 1/2 x 5 1/2	34x4k 34x7k	I	*Indiana.....10	1	.....	3 1/2 x 5 1/2	34x5n 34x5n	B
Bessemer.....K-2	4	3695	4 1/2 x 5 1/2	36x5 36x10	I							Indiana.....12	1 1/2-2	.....	3 1/2 x 5 1/2	34x3 1/2 34x5k	W
Bethlehem.....KN	1	1195	3 1/2 x 5	35x5n 35x5n	B	F. W. D.....B	3	4200	4 1/2 x 5 1/2	36x6 36x6	B	Indiana.....20	2	.....	4 1/2 x 5 1/2	36x4k 36x7k	W
Bethlehem.....GN	2	1795	4 x 5 1/2	34x4 34x6k	D	Fageol.....1 1/2	1 1/2	3000	3 1/2 x 5 1/2	34x3 1/2 34x6k	W	Indiana.....25	2 1/2-3	.....	4 1/2 x 5 1/2	36x4k 36x8k	W
Bethlehem.....GN	3	2495	4 x 6 1/2	36x4k 36x8k	D	Fageol.....2 1/2	2 1/2	3900	4 1/2 x 5 1/2	34x4 36x7	W	Indiana.....35	3 1/2-4	.....	4 1/2 x 5 1/2	36x5k 36x5dk	W
Bridgeport.....A	1 1/2	.....	3 1/2 x 5 1/2	34x3 1/2 34x6	W	Fageol.....3 1/2	3 1/2	5000	4 1/2 x 5 1/2	36x5k 40x5dk	W	Indiana.....51	5-7	.....	5 x 6 1/2	36x5k 40x6dk	W
Bridgeport.....B	2 1/2	.....	4 1/2 x 5 1/2	36x4 36x4d	W	Fageol.....5	5	5700	4 1/2 x 5 1/2	36x6 40x6d	W	*International.....S	1	1250	3 1/2 x 5	32x4 1/2 32x4 1/2	I
Bridgeport.....C	3 1/2	.....	4 1/2 x 6	36x5 36x10	W	Fageol.....R	2	1700	3 1/2 x 5	36x4 36x6	I	International.....21	1 1/2	1550	3 1/2 x 5 1/2	36x3 1/2 36x3 1/2	I
Brinton.....C	2	2500	3 1/2 x 5	34x4 34x5	W	Federal.....SD	1 1/2	1375	3 1/2 x 5	35x5n 36x6n	W	International.....31	1 1/2	1650	3 1/2 x 5 1/2	36x3 1/2 36x5k	I
Brinton.....D	3	2075	4 1/2 x 5 1/2	36x4 36x7	W	Federal.....TE	1 1/2	1800	3 1/2 x 5	36x5 36x5	W	International.....41	2	2100	3 1/2 x 5 1/2	36x3 1/2 36x6k	I
Brookway.....E	1	.....	4 x 5	33x5n 33x5n	B	Federal.....UE	2-2 1/2	2175	4 1/2 x 5 1/2	36x4 36x7	W	International.....52	2 1/2	3500	4 1/2 x 5	36x6n 36x6dn	I
Brookway.....S-5	1 1/2	.....	4 x 5	36x4 36x6	W	Federal.....WE	3 1/2-4	2425	4 1/2 x 5 1/2	36x5 36x5d	W	International.....61	3	2400	4 1/2 x 5	36x4k 36x7k	I
Brookway.....SK	1 1																

## Specifications of Current Motor Truck Models—Continued

NAME AND MODEL	Tons Capacity	Chassis Price	Eng. and Stroke	TIRES	Final Drive	NAME AND MODEL	Tons Capacity	Chassis Price	Eng. and Stroke	TIRES	Final Drive	NAME AND MODEL	Tons Capacity	Chassis Price	Eng. and Stroke	TIRES	Final Drive
				Front Rear						Front Rear						Front Rear	
Kleiber.....BB	2	\$3600	4 1/2 x 5 1/2	36x4k 36x7k	W	Ogden.....AZ	1	.....	3 1/2 x 5	34x5n 34x5n	W	Selden.....70	3 1/2-5	\$3750	4 1/2 x 5 1/2	36x5 36x10	W
Kleiber.....B	2 1/2	3950	4 1/2 x 5 1/2	36x5k 36x8	W	Ogden.....D	1 1/2	.....	3 1/2 x 5	36x3 1/2 36x5	W	Selden.....90	5-7	4950	4 1/2 x 6	36x6 40x12	W
Kleiber.....C	3 1/2	4600	4 1/2 x 5 1/2	36x5 36x5d	W	Ogden.....E	2 1/2	.....	4 1/2 x 5 1/2	36x4 36x8	W	Seneca.....M	1 1/2	820	3 1/2 x 4 1/2	30x3 1/2 30x3 1/2	B
Kleiber.....D	5	5300	5 x 6 1/2	36x6 40x12	W	Old Hickory.....W	1	\$1775	3 1/2 x 5	36x3 1/2 36x4k	W	*Service.....12	1 1/2	.....	3 1/2 x 4 1/2	32x4 1/2 32x4 1/2	B
Koehler.....M	1 1/2	2150	3 1/2 x 5	34x3 1/2 34x5	W	Old Reliable.....A	1 1/2	2350	4 x 5	34x4 36x6	W	*Service.....25	1 1/2	.....	3 1/2 x 5 1/2	34x5n 34x5n	B
Koehler.....D	2 1/2	3175	4 x 5 1/2	36x4 36x7	W	Old Reliable.....B	2 1/2	3500	4 1/2 x 5 1/2	34x4 36x4d	W	Service.....21	1 1/2	.....	3 1/2 x 5 1/2	34x5 34x5	W
Koehler.....MCS	2 1/2	3275	4 x 5 1/2	36x4 36x7	W	Old Reliable.....C	3 1/2	4250	4 1/2 x 5 1/2	36x5 36x5d	W	Service.....32	2	.....	4 x 5 1/2	36x3 1/2 36x7	W
Koehler.....F	3 1/2	4470	4 1/2 x 5 1/2	36x5 36x10	W	Old Reliable.....D	5	5000	4 1/2 x 5 1/2	36x6 40x6d	W	Service.....37	2	.....	4 1/2 x 5 1/2	36x5n 36x7n	W
Koehler, MT. Trac	5	3275	4 x 5 1/2	36x4 36x7	W	Old Reliable KLM	7	6000	4 1/2 x 5 1/2	36x6 40x7d	W	Service.....52	3	.....	4 1/2 x 5 1/2	36x4 36x8	W
Krebs.....23	3 1/2	1360	3 1/2 x 5	34x4 1/2 34x4 1/2	B	*Old Reliable Ecan	1	1095	3 1/2 x 5 1/2	35x5n 35x5n	I	Service.....72	3 1/2	.....	4 1/2 x 5 1/2	36x5 36x5d	W
Krebs.....24	1	1675	3 1/2 x 5	34x5 34x5	W	Olympic.....A	2 1/2	3200	4 1/2 x 5 1/2	36x4 36x8	W	Service.....77	4	.....	4 1/2 x 5 1/2	36x5 36x5d	W
Krebs.....45	1 1/2	2275	4 1/2 x 5 1/2	36x4 36x7	W	Oneida.....B9	1 1/2	2825	4 x 5 1/2	36x3 1/2 36x7	W	Service.....102	6	.....	4 1/2 x 5 1/2	36x6 40x6d	W
Krebs.....75	2 1/2	2550	4 1/2 x 5 1/2	36x4 36x8	W	Oneida.....C9	2 1/2	3200	4 x 5 1/2	36x4 36x8	W	Signal.....NF	1	.....	3 1/2 x 5	34x5n 36x6n	W
Krebs.....110	3 1/2	3175	4 1/2 x 5 1/2	36x5 40x10	W	Oneida.....D9	3 1/2	4050	4 1/2 x 5 1/2	36x5 36x10	W	Signal.....H	1 1/2	.....	4 1/2 x 5 1/2	34x4 36x6	W
Krebs.....140	5	.....	4 1/2 x 6	36x6 40x6d	W	Oneida.....E9	5	4725	4 1/2 x 5 1/2	36x6 40x12	W	Signal.....J	2 1/2	.....	4 1/2 x 5 1/2	34x4 36x8	W
						Oshkosh.....A	2	2485	3 1/2 x 5	36x6n 36x6n	B	Signal.....M	3 1/2	.....	4 1/2 x 5 1/2	36x5 40x5d	W
						Oshkosh.....AA	2	2585	3 1/2 x 5	36x6n 36x6n	B	Signal.....R	5	.....	4 1/2 x 5 1/2	36x6 40x6d	W
						Oshkosh.....B	2 1/2	3485	4 x 5 1/2	38x7n 38x7n	B	*Standard.....75	1 1/2	1330	3 1/2 x 5	36x5n 36x5n	W
						Oshkosh.....BB	2 1/2	3585	4 x 5 1/2	38x7n 38x7n	B	Standard.....I-K	1	1600	3 1/2 x 5	34x3 1/2 34x5k	W
						*Overland.....4	1 1/2	425	3 1/2 x 4	30x3 1/2 30x3 1/2	B	Standard.....72	1 1/2	2100	4 1/2 x 5 1/2	36x5 36x5d	W
												Standard.....66	3 1/2-5	3150	4 1/2 x 5 1/2	36x5 36x12	W
												Standard.....5-K	5-7	4400	4 1/2 x 6	36x6 40x14	W
												*Star.....1 1/2	1 1/2	610b	3 1/2 x 4 1/2	30x3 1/2 30x3 1/2	W
												Sterling.....1 1/2	1 1/2	2885	4 x 5 1/2	36x3 1/2 36x5k	W
												Sterling.....2	2	3085	4 x 5 1/2	36x4k 36x6k	W
												Sterling.....2 1/2	2 1/2	3200	4 1/2 x 5 1/2	36x4k 36x4k	W
												Sterling.....3 1/2	3 1/2	4325	4 1/2 x 5 1/2	36x5k 40x5d	W
												Sterling.....5-W	5	4950	5 x 6 1/2	36x6 40x6d	W
												Sterling.....5-C	5	5500	5 x 6 1/2	36x6 40x6d	C
												Sterling.....7 1/2	7 1/2	6000	5 x 6 1/2	36x6 40x7d	C
												*Stewart, Utility	11-11 1/2	1245	3 1/2 x 5 1/2	34x4 1/2 34x4 1/2	I
												Stewart.....15	15	1445	3 1/2 x 5 1/2	35x5n 35x5n	I
												Stewart.....9	9 1/2-12	1790	3 1/2 x 5	34x3 1/2 34x6	I
												Stewart.....7-X	2 1/2-3	2390	4 1/2 x 5 1/2	34x4 34x8	I
												Stewart.....10-X	3 1/2-4	3190	4 1/2 x 5 1/2	36x5 36x10	I
												*Stewart.....1 1/2	1 1/2	1245	4 x 5 1/2	34x4 1/2 34x4 1/2	B
												*Stoughton.....C	1	1095	3 1/2 x 5	34x4 1/2 34x4 1/2	B
												Stoughton.....A	1	1790	3 1/2 x 5 1/2	34x5n 34x5n	W
												Stoughton.....B	1 1/2	2150	3 1/2 x 5 1/2	36x3 1/2 36x5	W
												Stoughton.....D	2	2490	4 x 5 1/2	36x4 36x7	W
												Stoughton.....F	3	3150	4 1/2 x 5 1/2	36x5d 36x5d	W
												Sullivan.....E	2	2800	4 1/2 x 5 1/2	36x4k 36x7k	W
												Sullivan.....H	3 1/2	3750	4 1/2 x 6	36x5 36x5d	W
												*Thomart.....1 1/2	1 1/2	1795	4 x 5 1/2	34x5 34x5	C
												Tiffin.....GW	2 1/2	2100	4 1/2 x 5 1/2	36x3 1/2 36x5	W
												Tiffin.....MW	2 1/2	2700	4 1/2 x 5 1/2	36x4 36x3 1/2	W
												Tiffin.....PW	3 1/2	3600a	4 1/2 x 5 1/2	36x5 40x5d	W
												Tiffin.....PW	5	4300	4 1/2 x 6	36x6 40x6d	W
												Tiffin.....UW	6	4500	4 1/2 x 6	36x6 40x12	W
												Titan.....UW	2	2750	4 x 5	36x4k 36x7k	D
												Titan.....UW	2 1/2	2950	4 1/2 x 5 1/2	36x4k 36x8k	D
												Titan.....UW	3 1/2	3950	4 1/2 x 6	36x5k 40x10k	D
												Titan.....UW	5	4550	4 1/2 x 6	36x5 40x12	D
												Tower.....J	1 1/2	2000	4 1/2 x 5 1/2	35x5n 38x7n	W
												Tower.....H	2 1/2	2475	4 1/2 x 5 1/2	36x4 36x7	W
												Tower.....G	2 1/2	3475	4 1/2 x 5 1/2	36x5 36x5d	I
												Traffic.....C	1 1/2	1595a	3 1/2 x 5	35x5n 35x5n	I
												Traffic.....C	2	1895a	3 1/2 x 5	34x3 1/2 34x5k	I
												*Transport.....15	1	1295	3 1/2 x 5	32x4 1/2 32x4 1/2	B
												Transport.....25	1 1/2	1495	3 1/2 x 5 1/2	34x4 1/2 34x5k	I
												Transport.....35	2	1885a	3 1/2 x 5	36x3 1/2 36x6k	I
												Transport.....55	3	2385	4 1/2 x 5 1/2	36x4k 36x8k	I
												Transport.....60	3 1/2	2585	4 1/2 x 5 1/2	36x4k 36x8k	I
												Transport.....75	5	3485	4 1/2 x 6	36x5k 36x12k	I
												Traylor.....B	1 1/2	2390	3 1/2 x 5 1/2	34x3 1/2 34x5	W
												Traylor.....D	2-2 1/2	2850	4 x 5 1/2	36x4 36x7	W
												Traylor.....D	3-3 1/2	3300	4 1/2 x 5 1/2	36x4 36x8k	W
												Traylor.....F	5-6	4700	4 1/2 x 6	36x6 40x6d	W
												Triangle.....AA	1	1285	3 1/2 x 5	34x4 1/2 34x4 1/2	I
												Triangle.....A	1 1/2-2	1985	3 1/2 x 5 1/2	34x3 1/2 34x6	I
												Triangle.....C	2-2 1/2	2285	3 1/2 x 5 1/2	36x4k 36x7k	I
												Triangle.....B	2 1/2-3	2585	4 x 5 1/2	36x4k 36x7k	I
												Twin City.....B.W.	2	2400	4 x 5 1/2	36x6 40x8	I
												Twin City.....A.W.	3 1/2	3500	4 1/2 x 6	36x5 40x5d	I
												*Twin City.....B	3 1/2	.....	5 1/2 x 6	36x6 36x6	I
												*Twin City.....A	5	.....	5 1/2 x 6	36x7 36x7	I
												Ultimate.....A	2	3150	4 x 5 1/2	36x3 1/2 36x6	W
												Ultimate.....AJ	2	3200	4 1/2 x 5 1/2	36x3 1/2 36x6	W
												Ultimate.....AJL	2	3250	4 1/2 x 5 1/2	36x3 1/2 36x6	W
												Ultimate.....B	3	3700	4 1/2 x 5 1/2	36x4 36x4d	W
												Ultimate.....BL	3	3900	4 1/2 x 5 1/2	36x4 36x4d	W
												Ultimate.....D	5	5500	5 x 6 1/2	36x6 40x12	W
												United.....A	1 1/2	2445	3 1/2 x 5 1/2	36x3 1/2 34x5k	W
												United.....B	2 1/2	3150	4 1/2 x 5 1/2	36x4k 36x7k	W
												United.....C	3	3975	4 1/2 x 5 1/2	36x5 36x5d	W
												United.....V	5	4500	4 1/2 x 6	36x6 40x6d	W
												*United States.....U	1 1/2	1800	3 1/2 x 5 1/2	34x5n 34x5n	B
												United States.....NW	1 1/2-2	2375	3 1/2 x 5	36x5 36x3 1/2	I
												United States.....N	1 1/2-2	2175	3 1/2 x 5	36x3 1/2 36x5k	W





## Specifications of Current Passenger Car Models

PRICES										NAME AND MODEL	Carburetor	Starting and Lighting	Ignition	Clutch: Type and Make	Gearset	Universal: Type and Make	Rear Axle Type and Make	Gear Ratios	
2-Pass.	5-Pass.	7-Pass.	Sport	Coupe	Sedan	Wheel Base	Tires	Engine Make	Cylinders: Bore and Stroke										Rated Horse Power (N.A.C.C.)
\$1995c	\$1785	\$1850	\$1885c		\$2485	127	33x4 1/2	H-S.	6-3 1/2x5	29.40	American.....D-66	Strom.	G-D.	A-K.	s-p B&B.	B & B.	m Hartford.	F Salis.	4.50
	1650					127	33x4	Own.	2-		American.....Steamer	None.	L-N.	L-N.	None.	None.		Own.	1.75
1495	1495	1505	1595c	1450c	1995d	114	32x4	Cont.	6-3 1/2x4 1/2	23.44	Anderson.....Aluminum 6	West.	West.	s-p B&B.				Salis.	
1785p			1945c			120	33x4	Cont.	6-3 1/2x4 1/2	27.34	Anderson.....Series 40	Rayfield.	Remy.	Remy.	s-p B&B.	Durston.	f Snead.	3/4 F Salis.	4.50
1575	2620	2645	1895n	3625	3695	130	34x4 1/2	Own.	8-3 1/2x5	33.80	Apperson.....8-21-S	Johnson.	Bijur.	Remy.	m-d Own.	Own.	m Sterling.	1 1/2 F Own.	4.25
	1475	1545n	1895n	2275	2345	121	32x4	Cont.	6-3 1/2x4 1/2	27.34	Auburn.....6-51	Strom.	Remy.	Remy.	s-p B&B.	G-L.	m Universal.	F Salis.	4.75
	1395				1850d	118	32x4	Cont.	6-3 1/2x4 1/2	23.44	Barley.....	Delco.	Delco.	Delco.	s-p B&B.	Fuller.	f M&E.	Col.	
1800	1800			2400	2500	121	32x4	Cont.	6-3 1/2x4 1/2	25.35	Bay State.....	Strom.	Delco.	Delco.	s-p B&B.	Warner.	m Spicer.	3/4 F Col.	4.67
2050	2050c			3950	3950	121	32x4	Buda.	4-3 1/2x5 1/2	22.50	Biddle.....B1 & B5	Zenith.	G-D.	Simms.	s-p Warner.	Warner.	m Spicer.	1 1/2 F Std.	4.50
5000	5000			7000	7000	125	32x4 1/2	Own.	4-4 x5 1/2	25.60	Brewster.....91	Zenith.	USL.	Bosch.	c Own.	Own.	F Own.	F Own.	3.92
865	885	725g		1175	1395	109	31x4	Own.	4-3 1/2x4 1/2	18.23	Buick.....1923-34-5-6-7-38	Marvel.	Delco.	Delco.	m-d Own.	Own.	m Own.	3/4 F Own.	4.66
					1325														
1175	1195	975g		1935	1985	118	33x4	Own.	6-3 1/2x4 1/2	27.34	Buick.....1923-41-4-5-47	Marvel.	Delco.	Delco.	m-d Own.	Own.	m Own.	3/4 F Own.	4.60
		1435	1625a	1895	2195	124	34x4 1/2	Own.	6-3 1/2x4 1/2	27.34	Buick.....1923 48-9-50-4-55	Marvel.	Delco.	Delco.	m-d Own.	Own.	m Own.	3/4 F Own.	4.90
			1675c																
2885	2885	2885		3675	3950	132	33x5	Own.	8-3 1/2x5 1/2	31.25	Cadillac.....61	Own.	Delco.	Delco.	m-d Own.	Own.	m Spicer.	F Tim.	4.50
				3750d	4300														
1750	1790			2480	2575	122	32x4 1/2	Cont.	6-3 1/2x4 1/2	27.34	Case.....X	Rayfield.	Delco.	Delco.	m-d Own.	Own.	f Snead.	2 1/2 F Col.	5.25
	1990	2250	1950	2480	2975	129	34x4 1/2	Cont.	6-3 1/2x5 1/2	31.54	Case.....W	Rayfield.	Delco.	Delco.	m-d Own.	Own.	f Arvac.	3/4 F Col.	4.45
1185	1185			1595	2295	117	32x4	Own.	6-3 1/2x4 1/2	25.35	Chalmers.....1922	Strom.	A-L.	Remy.	m-d Own.	Own.	m Hardy.	1 1/2 F Adams	5.13
		1345		1585	1585	122	32x4	Own.	6-3 1/2x4 1/2	25.35	Chalmers.....1922	Strom.	A-L.	Remy.	m-d Own.	Own.	m Hardy.	1 1/2 F Adams	5.13
1495	1495c	1645	1595a	1995c	2295d	123	33x4	Own.	6-3 1/2x5	29.40	Chandler.....Six	Rayfield.	Bosch.	Bosch.	s-p B&B.	Own.	f Own.	F Own.	4.45
					2375f														
510	525	425g		840c	860	102	30x3 1/2	Own.	4-3 1/2x4	21.53	Chevrolet.....Superior	Zenith.	A-L.	Remy.	c Own.	Own.	m Own.	1 1/2 F Own.	3.66
				680k															
1085	995		1260	1295d	1495	112	32x4	Own.	6-3 1/2x4 1/2	22.50	Cleveland.....41	Strom.	Bosch.	Bosch.	s-p Own.	Own.	m Mech.	3/4 F Own.	4.45
2685		2685	3285b	3285b	3285c	127 1/2	33x5	North.	8-3 1/2x5 1/2	39.20	Cole.....890	Johnson.	Delco.	Delco.	c North.	North.	m Spicer.	F Col.	4.46
				3685f															
1475	1475		1475c	1925c	1995d	115	32x4	Cont.	6-3 1/2x4 1/2	27.34	Columbia.....Big Six	Strom.	A-L.	A-K.	s-p B&B.	Durston.	m Spicer.	3/4 F Tim.	
995	985			1395d	1395d	115	31x4	Cont.	6-3 1/2x4 1/2	23.44	Columbia.....Light Six	Strom.	A-L.	A-L.	s-p B&B.	Durston.	m Spicer.	3/4 F Tim.	
1395	1395		1495b	2065b	2165d	116	32x4	Falls.	6-3 1/2x4 1/2	23.44	Courier.....	Till.	Bijur.	A-K.	s-p B&B.	Muncie.	f Norwalk.	3/4 F Col.	5.00
			1495c																
3000	3000	3000		4500	4500	122 1/2	32x4	Cont.	6-3 1/2x5 1/2	31.54	Crawford.....22-6-60	Strom.	West.	Bosch.	m-d B-L.	B-L.	Spicer.	1 1/2 F Tim.	
			3500			135	33x5	Cont.	6-3 1/2x5 1/2	31.54	Crawford-Dagmar.....6-60	Zenith.	West.	Bosch.	m-d B-L.	B-L.	Spicer.	1 1/2 F Tim.	
						142	33x5	Own.	8-3 1/2x5	45.00	Cunningham.....V	Strom.	Delco.	Delco.	m-d Own.	Own.	f Snead.	F Tim.	4.23
4350b	4350c	4350		5250	6000	132	33x5	Own.	8-3 1/2x5 1/2	39.20	Daniels.....D-19	Zenith.	Delco.	Delco.	m-d Own.	Own.	m Spicer.	F Tim.	4.50
	1195		1495	1795	1795	114	31x4	Cont.	6-3 1/2x4 1/2	23.44	Davis.....71	Strom.	Delco.	Delco.	s-p B&B.	Warner.	m Peters.	1 1/2 F Tim.	5.10
1595	1595		1695	2095	120	32x4	Cont.	6-3 1/2x4 1/2	6-3 1/2x4 1/2	27.34	Davis.....61-67	Strom.	Delco.	Delco.	s-p B&B.	Warner.	m Peters.	1 1/2 F Tim.	5.15
1175	1175	1295c	1215	1515	1595	112	32x4	H-S.	4-3 1/2x5	19.60	Dixie Flyer.....H-S-70	Strom.	Dyneto.	Eisemann.	s-p B&B.	G-L.	f Hardy.	F Peru.	4.75
850	880			980b	1195d	114	32x4	Own.	4-3 1/2x4 1/2	24.03	Dodge Brothers.....	Stewart.	N.E.	N.E.	m-d Own.	Own.	m Own.	1 1/2 F Own.	4.16
3350a	3950c	3950		985c	5750f	132	33x5	Own.	6-4 x5	38.40	Dorris.....6-80	Strom.	West.	Bosch.	m-d Own.	Warner.	m Spicer.	F Tim.	4.23
865	885		1015a	1240	1370	108	31x4	D-Ly.	4-3 1/2x5	19.60	Dort.....19-14	Carter.	Bosch.	Conn.	m-d Detall.	Own.	m Mech.	3/4 F Flint.	4.66
950	990		1015d	1020k	1070k														
				1365	1495	115	31x4	Falls.	6-3 1/2x4 1/2	23.44	Dort.....25-20	Carter.	Bosch.	Bosch.	m-d Detall.	Own.	Mech.	3/4 F Flint.	4.66
				1650	1975	104	30x3 1/2	Own.	4-2 1/2x4 1/2	11.03	Driggs.....	Zenith.	Bosch.	Bosch.	s-p Hoos.	Mech.	m Spicer.	3/4 F Own.	4.75
1275	1275			7800	7800	134	33x5	Own.	8-2 1/2x5	26.45	Duesenberg.....Straight 8	Strom.	Delco.	Delco.	s-p Own.	Own.	f Own.	2 1/2 F Own.	4.81
6500	6500	6750		3800	4000	124	32x4 1/2	Own.	4-3 1/2x5 1/2	24.81	Du Pont.....A	Y&T.	West.	Eisemann.	m-d B-L.	B-L.	m Spicer.	Col.	4.50
3000	3200			1365	1365	109	31x4	Cont.	4-3 1/2x4 1/2	24.03	Durant.....A-22	Till.	A-L.	A-L.	s-p Own.	Own.	m Spicer.	3/4 F Adams	4.30
890	890			2250	2400	123 1/2	32x4 1/2	Anst.	6-3 1/2x4 1/2	25.35	Durant.....B-22	Rayfield.	A-L.	A-L.	s-p Ansted.	Warner.	m Spicer.	3/4 F Tim.	5.15
1600	1650			1395c	1795	112	32x4	Own.	4-3 1/2x5 1/2	18.91	Earl.....40	Scoe.	A-L.	Conn.	s-p B&B.	Own.	f Own.	1 1/2 F Own.	4.68
1485	1095	950g		1095	1345	118	33x4	Lyc.	4-3 1/2x5	19.60	Elcar.....K-4	Strom.	Delco.	Delco.	s-p B&B.	Muncie.	m Peters.	3/4 F Salis.	4.50
1095	1095		1095	1395	1975	118	33x4	Cont.	6-3 1/2x4 1/2	27.34	Elcar.....8-R	Strom.	Delco.	Delco.	m-d Warner.	Warner.	m Spicer.	3/4 F Salis.	4.50
1395	1395		1395	1615	1615	118	33x4	Falls.	6-3 1/2x4 1/2	22.44	Elgin.....K-1	Strom.	West.	Wagner.	s-p B&B.	Mech.	m Mech.	3/4 F Col.	4.66
1125c	1125		1165	1695	1895	108 1/2	32x4	Own.	4-3 1/2x5	18.23	Essex.....	Own.	Bosch.	Bosch.	m-d Own.	Own.	m Spicer.	3/4 F Own.	4.66
	1045			1145k															
269r	298a	235g		595	595	100	30x3 1/2	Own.	4-3 1/2x4	22.50	Ford.....T	Own.	Own.	Own.	m-d Own.	Own.	m Own.	1 1/2 F Own.	3.63
				725															
3900	3900			4900	4900	132	32x4 1/2	Own.	6-3 1/2x5	27.34	Fox.....7F	Zenith.	West.	Bosch.	m-d B-L.	B-L.	Spicer.	1 1/2 F Tim.	4.45
1900	1950	1750g		2750	2850	115	32x4	Own.	6-3 1/2x4	25.35	Franklin.....10	Own.	N.E.	A-K.	s-p B&B.	Own.	m Spicer.	3/4 F Own.	4.73
965	965			1115k	1365d	112	32x4	Lyc.	4-3 1/2x5	21.76	Gardner.....T-R & G	Carter.	West.	West.	s-p B&B.	Mech.	m Mech.	3/4 F Flint.	4.80
490	490			760	100	30x3 1/2	Own.	4-3 1/2x4	4-3 1/2x4	21.03	Gray.....	Scoe							



# Use 'Em Yourself to Sell 'Em

**Y**OU can't give consistent first-hand facts about Weed De Luxe Tire Chain safety and economical service and expect your customers to believe you if you don't **USE 'EM YOURSELF!**

## *Show Weed Chains In Use*

When streets are wet, put these improved chains on your cars standing out in front of your place of business, especially the delivery or service cars that carry your name. Advertise the fact that you not only sell Weed De Luxe Chains, but you **USE 'EM YOURSELF!**

Go even further than this. Equip display cars with a double set of Weed De Luxe Chains when the going outside is especially slippery. The effect on passers-by and prospects will sell many chains for you. It doesn't take a minute to snap the new Easy-Action Connecting Hook on these improved tire chains.

Weed De Luxe Chains are so different from the long familiar Weed that they command attention. The Reinforcing-Link that encircles each main cross chain link is obviously an improved feature. It explains far more forcibly than words how the Weed De Luxe Chains more than double the mileage of the regular Weed Chains which always have given such universal satisfaction.

## *Advertise Your Car With Chains*

Put four Weed De Luxe Chains on each of your cars and they will give fine publicity to your



automobile accessory department. Not only will people stop to examine the new chains, but they will be impressed by your foresight for the safety of the general public. *Good will and good business are twin brothers.* The success of the Yellow Cab Companies proves the public does notice and appreciate the safety furnished by the consistent use of tire chains. One of their most important rules requires that drivers put on chains whenever the streets are wet or otherwise skiddy.

## *How About Yourself?*

All motor car users should adopt this safety rule. Dealers who sell Weed De Luxe Tire Chains have an unusual opportunity to educate the motoring public in a far more intelligent use of chains. Give the four-chain idea a whirl when the streets get the least bit skiddy. Employ personal methods to cheer for Weed De Luxe Chains just as you cheer for other things you sell because you know they are mighty good for you. **USE 'EM YOURSELF!** Get chains on the tires whenever they are needed. Other motorists will respect your judgment and follow suit.

# AMERICAN CHAIN COMPANY, INCORPORATED

BRIDGEPORT, CONN.

In Canada: DOMINION CHAIN COMPANY, LIMITED, Niagara Falls, Ontario  
District Sales Offices: Boston Chicago New York Philadelphia Pittsburgh Portland, Ore. San Francisco



# Weed De Luxe Chains

## Specifications of Current Passenger Car Models

PRICES						Wheel Base	Tires	Engine Make	Cylinders: Bore and Stroke	Rated Horse Power (N.A.C.C.)	NAME AND MODEL	Carburetor	Starting and Lighting	Ignition	Clutch: Type and Make	Gearset	Universal: Type and Make	Rear Axle: Type and Make	Gear Ratios
2-Pass.	5-Pass.	7-Pass.	Sport	Coupe	Sedan														
\$3985	\$4090c	\$4090		\$5500	\$5500	132	33x5	Own.	8-3 1/4x5 1/4	33.80	LaFayette	Johnson.	Delco.	Delco.	m-d Own.	Own.	m Own.	F Own.	4.58
5500	5500	5500		5500	5500	134	32x4 1/2	Own.	6-3 1/2x5 1/4	33.75	Leach.	Rayfield.	Delco.	Delco.	m-d Own.	Own.	m Own.	F Tim.	
1695	1695	1795	\$2045d	2345c	2445d	123	32x4 1/2	Anst.	6-3 1/2x4 1/2	25.35	Lexington.	Rayfield.	G-D.	Conn.	m-d Ansted.	Warner.	f Sneed.	3/4 F Own.	5.10
1575	1395		1575	2085	2245	117	32x4	Own.	6-3 1/2x5	23.41	Liberty.	Strom.	Wagner.	Wagner.	s-p B&B.	Detroit.	m Spicer.	1/2 F Tim.	4.80
3800	3800c	3800		4400d	4700d	136	33x5	Own.	8-3 3/8x5	36.45	Lincoln.	Strom.	Delco.	Delco.	m-d Own.	Own.	m Spicer.	F Tim.	4.58
6890g	7600c	7600		10500	11000	142	35x5	Own.	6-4 1/2x5 1/4	48.60	Locomobile.	Ball&B.	West.	Delco.	m-d Own.	Own.	m Own.	F Own.	3.50
3385	3185c	3185		3985	4385	136	32x4 1/2	Own.	6-3 3/8x5 1/4	33.75	Marmon.	Strom.	Delco.	Delco.	m-d Own.	Own.	m Spicer.	3/4 F Own.	3.75
885	885			985	1335	109	31x4	Own.	4-3 3/8x4 1/2	21.03	Maxwell.	Stewart.	A-L.	Simms.	c Own.	Own.		3/4 F Own.	4.56
6300	6300c	6300		7500	7500	140	33x5	Own.	6-4 1/2x6	48.60	McFarlan.	Rayfield.	West.	Splitdorf.	s-p B&B.	B-L.	m Peters.	F Tim.	3.50
3950	3950c	3950c		4850	5250	132	32x4 1/2	Own.	4-3 3/4x6 3/4	22.50	Merced.	Ball&B.	West.	Eisemann.	m-d Own.	Own.	m Spicer.	F Own.	3.87
1895	1895	1895		2050c	2275d	120	32x4	Own.	6-3 3/4x5 1/2	33.75	Merced.	Strom.	Delco.	Eisemann.	s-p B&B.	Muncie.	f Sneed.	F Col.	3.77
1490b	1590		1890	2050c	2275d	120	32x4	Own.	6-3 3/4x5	29.40	Mitchell.	Strom.	Remy.	Remy.	s-p B&B.	Own.	m Own.	F Own.	4.42
950	950		1890	2050c	2275d	127	32x4 1/2	Own.	6-3 3/4x5	29.40	Mitchell.	Strom.	Remy.	Remy.	s-p B&B.	Own.	m Own.	F Own.	4.42
1295	1195	p1445d	1885c	1585c	1695	115	31x4	Cont.	4-3 3/4x4 1/2	16.90	Monroe.	Zenith.	Conn.	m-d Own.	Mech.	m Universal.	3/4 F Own.	5.30	
1785	1785	1785	1885	2785	2785	128	33x4 1/2	Cont.	6-3 3/8x4 1/2	23.44	Moon.	Strom.	Delco.	Delco.	s-p B&B.	Warner.	m Spicer.	1 1/2 F Tim.	4.80
				2485c					6-3 3/8x4 1/2	27.34	Moon.	Strom.	Delco.	Delco.	s-p B&B.	B-L.	m Spicer.	1 1/2 F Tim.	5.09
1210	1210		1395c	2040d	2190f	121	33x4	Own.	6-3 1/2x5	25.35	Nash.	Marvel.	Delco.	Delco.	s-p B&B.	Own.	m Own.	1 1/2 F Own.	4.50
915	935	1390	1615	1890c	2190f	127	34x4 1/2	Own.	6-3 1/2x5	25.35	Nash.	Marvel.	Delco.	Delco.	s-p B&B.	Own.	m Own.	1 1/2 F Own.	4.50
				1385h	1545d	112	33x4	Own.	4-3 3/8x5	18.23	Nash Four.	Schebler.	Delco.	Delco.	s-p B&B.	Own.	m Own.	1 1/2 F Own.	4.88
2475b	2475c	2375	3250c	3825f	3825f	130	32x4 1/2	Own.	6-3 1/2x5 1/4	29.40	National.	Rayfield.	West.	Delco.	s-p B&B.	B-L.	m Arvae.	F Col.	4.08
2500	2500c	2600c		3500d	3500d	128	32x4 1/2	Cont.	6-3 1/2x4 1/2	25.35	Noma.	Claudel.	Delco.	Delco.	s-p B&B.	Detroit.	m Spicer.	1 1/2 F Tim.	4.45
2500	2500			5500	5500	128	33x5	Bea.	6-3 1/2x5 1/4	29.40	Noma.	Zenith.	Delco.	Delco.	s-p B&B.	Detroit.	f Spicer.	1 1/2 F Tim.	4.45
975	995	795g	1165c	1445d	1545	115	32x4	Own.	6-2 1/2x4 1/2	18.99	Oakland.	Marvel.	Remy.	Remy.	c Own.	Muncie.	m Mech.	F Own.	4.33
3750c	3750	3850	3750c	4500c	4800f	134	33x5	Cont.	6-3 3/8x5 1/4	31.51	Ogren.	Rayfield.	Bosch.	Bosch.	m-d B-L.	B-L.	m	F Col.	4.00
955	975	1350d	1075	1475	1595	115	32x4	Own.	4-3 1/2x5 1/4	21.86	Oldsmobile.	Zenith.	A-L.	Remy.	s-p B&B.	Warner.	m Own.	3/4 F Own.	4.33
1735c	1850c	1735		1675	1875	122	33x4 1/2	Own.	8-2 1/2x4 1/2	26.45	Oldsmobile.	Ball&B.	Delco.	Delco.	c Own.	Warner.	m Own.	3/4 F Own.	4.53
1625p	1375		425g	795	875	100	30x3 1/2	Own.	8-2 1/2x4 1/2	26.45	Oldsmobile.	Johnson.	Delco.	Delco.	s-p B&B.	Warner.	m Spicer.	3/4 F Own.	5.10
525	525								4-3 3/8x4	18.23	Overland.	Till.	A-L.	Conn.	s-p B&B.	Own.	m Own.	1 1/2 F Own.	4.50
2485	2485	2250c	3175	3275	3275	126	33x4 1/2	Own.	6-3 3/8x5	27.34	Packard.	Own.	A-K.	Delco.	m-d Own.	Own.	f Spicer.	1 1/2 F Own.	4.30
	2350g	2685		3525	333 1/2	133	33x1 1/2	Own.	6-3 3/8x5	27.34	Packard.	Own.	A-K.	Delco.	m-d Own.	Own.	f Spicer.	1 1/2 F Own.	4.36
3850	3850	3850	5210	5400	5400	136	35x5	Own.	12-3x 5	43.20	Packard.	Own.	Bijur.	Delco.	m-d Own.	Own.	m Spicer.	1 1/2 F Own.	4.66
1465	1465	1290g	1995	2245	119	32x4	Own.	6-3 1/2x5	25.35	Paige.	Strom.	Remy.	A-K.	s-p Long.	Warner.	m Universal.	3/4 F Salis.	4.75	
2495b		2195	2245	3100	3155	131	33x4 1/2	Cont.	6-3 3/8x5	33.75	Paige.	Rayfield.	Remy.	A-K.	s-p Long.	Warner.	m Mech.	3/4 F Tim.	4.60
	1390	1425	2395	2395	120	32x4 1/2	Cont.	6-3 3/8x4 1/2	27.34	Peterson.	Strom.	Delco.	Delco.	s-p B&B.	Durston.	m Hartford.	1 1/2 F Std.	4.50	
3300	2990c	2990	3300c	3990d	128	33x5	Own.	8-3 1/2x5	33.80	Peerless.	Ball&B.	Delco.	Delco.	m-d Own.	Own.	m Spicer.	3/4 F Tim.	4.90	
			3400c	4090f															
5250	5250c	5250	6800	6900	138	33x5	Own.	6-4 x5 1/2	38.40	Pierce-Arrow.	Own.	Delco.	Delco.	m-d Own.	Own.	m Spicer.	1 1/2 F Own.	3.93	
2050	2000	2050	2950	3090	126	32x4 1/2	H-S.	6-3 1/2x5	25.35	Pilot.	Till.	Bijur.	Conn.	s-p B&B.	Muncie.	m Hartford.	3/4 F Col.	4.33	
3150	3100c	3250	4300	5100	126 1/2	32x4 1/2	Own.	6-3 3/8x5 1/2	27.34	Premier.	Johnson.	Delco.	Delco.	s-p B&B.	Own.	m Spicer.	3/4 F	4.58	
1095	1095		1750	1825	117	32x4	Falls.	6-3 1/2x4 1/2	23.44	Premcar.	Strom.	Wagner.	Wagner.	s-p B&B.	Mech.	m Spicer.	3/4 F	4.66	
	1695		2385	2475	116	32x4	Own.	4-3 3/8x5	22.50	R & V Knight.	Strom.	Wagner.	Wagner.	s-p B&B.	B-L.	m Spicer.	F Salis.	4.75	
2475	2475c	2475	3015	3105	127	32x4 1/2	Own.	6-3 1/2x4 1/2	29.40	R & V Knight.	Strom.	Wagner.	Wagner.	s-p B&B.	B-L.	m Spicer.	1 1/2 F Tim.	4.90	
	1645	1485	1745	2355c	2435f	120	33x4	Own.	6-3 1/2x5	24.34	Reo.	Rayfield.	N.E.	N.E.	m-d Own.	Own.	m Own.	1 1/2 F Own.	4.70
			1835	1885															
3200	3200	3200	4000	4000	131	32x4 1/2	Dues.	4-4 1/2x6	28.90	Revere.	Strom.	West.	Bosch.	m-d B-L.	B-L.	m Spicer.	3/4 F Std.	4.00	
	1485		1885	1985	117	32x4	Own.	6-3 1/2x4 1/2	23.44	Rickenbacker.	Strom.	Simms	A-K.	c Own.	Own.	m Universal.	3/4 F Own.		
2685	2485c	2685	3585	3585	128	32x4 1/2	Cont.	6-3 1/2x5 1/4	29.40	Roamer.	Strom.	Bijur.	Bosch.	c G-L	G-L	f Sneed.	1 1/2 F Tim.	4.88	
3785	3485	3650c	4650c	4650c	128	32x4 1/2	Dues.	4-4 1/2x6	28.90	Roamer.	Strom.	Bijur.	Splitdorf.	m-d B-L	B-L	f Sneed.	1 1/2 F Tim.	3.77	
10900	10900	10950	12900	143 1/2	35x5				48.60	Rolls-Royce.	Own.	Bijur.	Bijur.	c Own.	Own.	m Own.	F Own.	3.25	
1645	1645		2645	2645	118	33x4	Cont.	6-3 1/2x4 1/2	25.35	Sayers Six.	Strom.	Delco.	Delco.	s-p B&B.	G-L	m Arvae.	1 1/2 F Std.	4.75	
875	875				108	30x3 1/2	Lye.	4-3 1/2x5	19.60	Seneca.	Zenith.	A-L.	A-L	s-p B&B.	G-L	m Universal.	F	4.75	
1095	1095				112	31x4	Lye.	4-3 1/2x5	19.60	Seneca.	Zenith.	A-L.	A-L	s-p B&B.	G-L	m Detroit.	F	4.50	
980	980		1695	1685	114	32x4	Supr.	4-3 3/8x5	18.23	Sperling.	Zenith.	Bijur.	Splitdorf.	s-p B&B.	Warner.	m Hartford.	3/4 F Peru.		
2150		2395	2395	2750	3200	127	34x4 1/2	Own.	8-3 1/2x5	33.30	Standard.	Zenith.	West.	Splitdorf.	s-p B&B.	G-L	m Arvae.	1 1/2 F Tim.	4.45
2750	2750	2750	3950c	3985f	130	32x4 1/2	Own.	2-4 x5			Stanley	None	Bijur.	None	None	None	None	1 1/2 F Own.	1.50
1785	1765		2750	2750	118	33x4	Cont.	6-3 1/2x4 1/2	25.35	Stanwood Six.	Strom.	West.	A-K	s-p B&B.	G-L	m Peters.	1 1/2 F Std.	4.50	
319r	348r	285g	580	615	102	30x3 1/2	Cont.	4-3 1/2x4 1/4	15.63	Star.	Till.	A-L.	A-L	s-p	G-L	m Spicer.	Tim.	4.87	
2250	2250	2450	3150	3450	125	34x4 1/2	Own.	4-3 3/8x5 1/8	22.50	Stearns-Knight.	Rayfield.	West.	A-K	m-d Own.	Own.	f Climax.	1 1/2 F Own.	4.50	
2700	2700	2850	3500	3700	130	34x4 1/2	Own.	6-3 3/8x5	27.34	Stearns-Knight.	Rayfield.	West.	A-K	m-d Own.	Own.	f Climax.	1 1/2 F Own.	4.50	
1575	1535c	1625c	2450	2550	122	33x4 1/2	Own.	6-3 1/2x4 1/2	25.35	Stevens	Till.	A-L.	A-L	s-p B&B.	Mech.	m Mech.	1 1/2 F Tim.	4.90	
7250	6900c	6800	8600	8900c	138	35x5	Own.	6-4 1/2x5 1/2	47.27	Stevens-Duryea.	Strom.	West.	Berling</						